Payload Software Interface Control Document Template

International Space Station Program

Revision B

August 7, 2002

TYPE 1 – APPROVED BY NASA

National Aeronautics and Space Administration
International Space Station Program
Johnson Space Center
Houston, Texas
Contract No. NAS15–10000 (PA 08)

REVISION AND HISTORY PAGE

REV.	DESCRIPTION	PUB. DATE
–	Initial Release (Reference per SSCD 001275, EFF. 08/14/98) Approved at the PCB	11/04/98
A	Revision A (Reference per SSCD 003197, EFF. 08/09/00)	10/23/00
B	Revision B (Reference per SSCD 007010, EFF. 08/15/02)	10/08/02

ERU: /s/ M. Hehn 10/08/02

INTERNATIONAL SPACE STATION

PAYLOAD SOFTWARE INTERFACE CONTROL DOCUMENT TEMPLATE

PREFACE

This document is the Payload Software Interface Control Document (ICD) Template for Pressurized and Attached Payloads.

This document is to be used by NASA and Payload Developers to document software data formats, identification labels, data sizes, and other software interface parameters. Unique Payload Software ICDs are to be developed using this document as a template. Unique Payload Software ICDs are to contain all the software interface parameters necessary to ensure that payload data processing equipment can communicate properly with the on–board International Space Station (ISS) vehicle data processing equipment.

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PAYLOAD SOFTWARE INTERFACE CONTROL DOCUMENT TEMPLATE

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PAYLOAD SOFTWARE INTERFACE CONTROL DOCUMENT TEMPLATE

LIST OF CHANGES

All changes to paragraphs, tables, and figures in this document are shown below.

SSCBD	ENTRY DATE	CHANGE	PARAGRAPH(S)
007010	08–15–02	Revision B	1–1, Appendix A, Appendix B

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1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

The purpose of this Payload Software Interface Control Document (ICD) Template is to define the flight unique software interface requirements between Integrated Payload Systems and the International Space Station (ISS) flight data handling elements, and forms the basis for the development of the payload–unique and flight–unique Software ICDs. This ICD also defines the format of the documentation output of the data collected and maintained in an electronic database. The term payload as used in this document refers to an integrated payload system and includes all International Standard Payload Racks (ISPRs), associated Utility Output Panel (UOP) connected payloads and Attached Payloads connected to the ISS Command and Data Handling (C&DH) System. The data contained in this document is provided by various organizations and is to be maintained in the Payload Data Library as defined in SSP 52000–PDS, Payload Data Sets Blank Book. When a Payload Developer is developing the payload–unique and flight–unique Software ICD, informational text in the unshaded boxes shall be removed and replaced with the requested data. Revision B is a complete update to the Revision A document and includes both onboard and ground software interface requirements.

1.2 PRECEDENCE

In the event of conflict between SSP 41161, United States On–orbit Segment (USOS) Specification or SSP 57000, Pressurized Payloads Interface Requirements Document (IRD), and the contents of this ICD Template, the order of precedence is as follows:

(1) SSP 41162, United States On–orbit Segment (USOS) Specification

(2) SSP 57000, Pressurized Payloads Interface Requirements Document (IRD)

(3) SSP 57002, Payload Software Interface Control Document Template

1.3 RESPONSIBILITY AND CHANGE AUTHORITY

This document is prepared and maintained by the ISS Prime Contractor in accordance with SSP 30459, Interface Control Plan. The Payload Control Board has document baseline authority for this document and subsequent changes.

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2.0 APPLICABLE AND REFERENCE DOCUMENTS

2.1 APPLICABLE DOCUMENTS

The latest revision of the following documents form a part of this document to the extent specified herein.

The Payload Engineering Integration (PEI) organization and the Payload Developer will establish the revision level and record them at the time of the unique ICD development.

2.1.1 STANDARDS

DOCUMENT NO.	TITLE
MIL–STD–1553	Digital Time Division Command/Response Multiplex Data Bus
ISO/IEC 8802–3	Information Technology – Local and Metropolitan Area Networks, formerly known as ANSI/IEEE 802.3

2.1.2 SPECIFICATIONS AND REQUIREMENTS

DOCUMENT NO.	TITLE
SSP 41162	United States On–orbit Segment Specification
SSP 57000	Pressurized Payloads Interface Requirements Document
SSP 52050	Software Interface Control Document Part 1, International Standard Payload Rack to International Space Station
SSP 50184	Physical Media, Physical Signaling and Link Level Protocol Specification for Ensuing Interoperability of High Rate Data Link Stations in the ISS
SSP 50478	Payload Data Library Requirements Document
D684–10056–01	Prime Contractor Software Standards and Procedures Specification

2.1.3 OTHER DOCUMENTS

DOCUMENT NO.	TITLE
CCSDS 701.0–B–2	Advanced Orbiting Systems, Networks and Data Links: Architectural Specification
MSFC–STD–1274	MSFC HOSC Telemetry Format Standards

DOCUMENT NO.	TITLE
MSFC–DOC–1949 Vol. 4 & 5	MSFC HOSC Database Definitions Volume 4 Telemetry Database, Volume 5 Command Database
SSP 30459	International Space Station Interface Control Plan
SSP 41158	Software ICD Part 1 United States On–orbit Segment (USOS) to International Ground Systems Segment (IGSS) Ku–band Telemetry Formats
SSP 41175–01	Prime Contractors Software Standards and Procedures Specifications
SSP 41175–02	Software Interface Control Document Part 1, Station Management and Control to International Space Station Book 2, General Software Interface Requirements
SSP 41175–08	Software Interface Control Document Part 1, Station Management and Control International Space Station Book 8, Multiplexer/Demultiplexer Interface
SSP 52000–DSS–PDP	Payload Data Sets Blank Book for Pressurized Payloads
SSP 50254	Operations Nomenclature

3.0 PAYLOAD SOFTWARE INTERFACES TO THE ISS COMMAND AND DATA HANDLING SYSTEM

3.1 ISS SOFTWARE INTERFACES AND FORMATS

The Payload Developer (PD) will determine the number and type of interfaces based on the requirements of the unique payloads. The PD is responsible for defining the specific hardware/software interfaces for the low, medium and high rate data links between the payload and ISS.

The Payload to ISS Command and Data Handling (C&DH) interfaces are depicted in Figure 3.1–1. A summary of the software services required by a payload for each of these interfaces is shown in Table 3.1–1. Applicable network interface parameters are shown in Table 3.1–2.

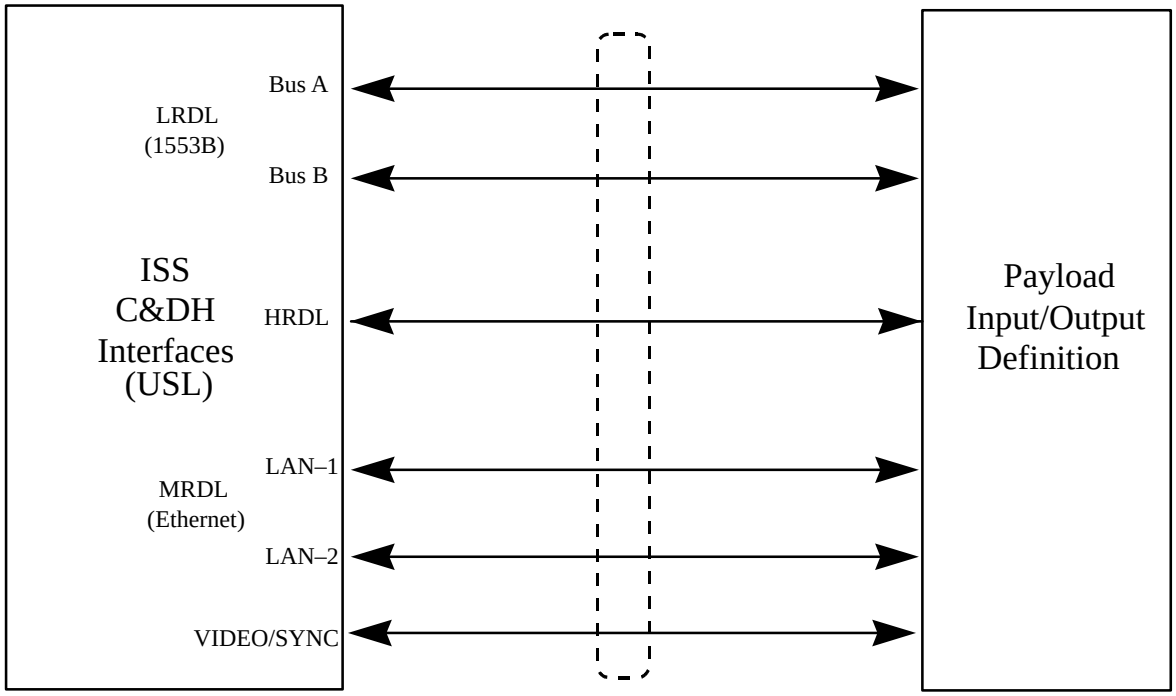


FIGURE 3.1–1 C&DH INTERFACES BETWEEN THE PAYLOAD AND ISS

The PD will generate this figure to depict the C&DH interfaces required for the processing of their telemetry data and commands.

TABLE 3.1–1 PAYLOAD SOFTWARE INTERFACE APPLICABILITY SUMMARY

	PAYLOAD C&DH INTERFACE		
SOFTWARE INTERFACE	**LRDL**	**MRDL**	**HRDL**
Low Rate Command PLMDM PCS POIC Uplink			
Low Rate Telemetry (LRT) Ground Processing (POIC) POIC Throughput To Payload Remote Site			
Health and Status Request for Service Caution and Warning Safety Parameters Limit Exception PCS Display Ground Processing (POIC) POIC Throughput To Payload Remote Site			
Medium Rate Telemetry (MRT) Ground Processing (POIC) Rack to Rack Communications POIC Throughput To Payload Remote Site			
High Rate Telemetry (HRT) Ground Processing (POIC) Rack to Rack Communications POIC Throughput To Payload Remote Site			
Broadcast Time			
Broadcast Ancillary Data			
Unique Ancillary Data Payload Unique Ancillary Data Sets Additional Requested Ancillary Data Parameters			
File/Data Load (Payload Read)			
File Dump (Payload Write)			
Timeliner			

The applicability information in this table will be automatically defined by data entries in Appendix A.

TABLE 3.1–2 PAYLOAD NETWORK PARAMETER SUMMARY

NETWORK INTERFACE	PARAMETER VALUE
Local Bus Remote Terminal	
LAN–1 Gateway source	
LAN–2 Gateway source	
LAN 1 Gateway destination	
LAN 2 Gateway destination	
LAN–1 Rack–to–rack source	
LAN–2 Rack–to–rack source	
LAN–1 Rack–to–rack destination	
LAN–2 Rack–to–rack destination	
Internet Protocol (range)	

The PD will define the address, buffer size and maximum acceptable latency for each applicable network interface by completing the network parameter portion of the Payload Data as defined in Appendix A.

3.1.1 DATA BIT/BYTE NUMBERING CONVENTION

Bits are numbered from 0 to N–1 with bit 0 being the first bit transmitted or Most Significant Bit (MSB) and N–1 the last bit or Least Significant Bit (LSB). Bytes contain 8 bits or 1 octet with bytes numbered from 1 to N with byte 1 being the first byte transmitted and byte N being the last. This definition is illustrated pictorially in SSP 52050, Software Interface Control Document Part 1, International Standard Payload Rack to International Space Station, Figure 3.1.1.1–1.

3.1.2 CONSULTATIVE COMMITTEE FOR SPACE DATA SYSTEMS (CCSDS) HEADER

3.1.2.1 CCSDS HEADER FORMATS

The CCSDS and SSP 50184, Physical Media, Physical Signaling and Link Level Protocol Specification for Ensuring Interoperability of High Rate Data Link Stations in the ISS, define the protocol used for packet data transfer containing primary and secondary headers. The definitions of the format of these headers are found in SSP 41175–2, Software Interface Control Document Part 1, Station Management and Control to International Space Station Book 2, General Software Interface Requirements, as tailored in SSP 52050. The CCSDS standard

header format definition is shown in Figure 3.1.2.1–1. CCSDS headers are comprised of a primary and secondary header. The Application Process ID (APID) is part of the CCSDS primary header and is used to define a unique source–destination pair. For telemetry, it represents the logical path between the data source and destination. For commands, a Logical Data Path (LDP) value is part of the secondary header, is assigned to each command end point, and uniquely identifies the logical destination of U.S. On–orbit Segment (USOS) commands.

APIDs are used for commanding and telemetry routing and are assigned by Payload Engineering Integration in the Unique–Payload Software ICD. More than one telemetry APID may be assigned to a single payload if required and once assigned, the telemetry APID will not change regardless of payload relocation. The payload operations integration center will use the telemetry APID for routing payload telemetry data to multiple destinations.

Possible command sources include Payload Operations Integration Center (POIC), Mission Control Center, International Partner Control Centers, Portable Computer System (PCS), and Timeliner. Command destinations are fixed by Remote Terminal (RT) and include ISPR and Attached Payload locations.

Telemetry sources may be assigned at the rack, subrack, or attached payload level and are not fixed to RTs. Possible telemetry destinations include the POIC, International Partner Control Centers, or User Facilities.

All data to be downlinked must use CCSDS headers as defined in Table 3.1.2.2–1. The CCSDS secondary header is required for the Low Rate Data Link (LRDL) data transfers and is normally optional for Medium Rate Data Link (MRDL) and High Rate Data Link (HRDL) data transfers. If telemetry data is to be processed at the Payload Operations and Integration Center (POIC), however, secondary headers are required. User data follows the header data and has a specific data format based on parameters located in the secondary header. If telemetry data is processed only at the user site, the contents of the secondary header is user–unique and is not documented here.

In a similar manner, payload health and status data contains a secondary header as defined in Table 3.1.2.2–2, but since the payload MDM does not process it, it is a ”don’t care”.

These CCSDS headers are not required for payload to payload data transfers on MRDL and HRDL. The data fields denoted by ”Real Time Assigned” will vary from packet to packet and can only be defined in real–time when the packets are generated.

All data and commands to the payload also use CCSDS headers. Primary and secondary headers for received data as well as POIC, payload MDM, Portable Computer System (PCS) or Timeliner commands are defined in Table 3.1.2.2–2.

Field ID	Wd #	MSB	1	2	3	4	5	6	7	8	9	10	11	12	13	14	LSB
Primary Header	1	Version # (000)			Type	Sec Hdr Flag	APID										
	2	Seq Flags			Packet Sequence Count												
	3	Packet Length (# Bytes – 1 following this field)															
Secondary Header	4	Time (Most Significant Bits (MSBs) of Coarse Time)															
	5	Time (LSBs of Coarse Time, LSB = 1 second)															
	6	Fine Time								Time ID		Check Wrd	ZOE TLM*	Packet Type			
	7	Packet ID Word #1 (Element and usage dependent)															
	8	Packet ID Word #2 (Element and usage dependent)															
User Data	9	User Data Word #1															
	n–1	User Data Word #m–1															
Checkwd	n	User Data Word #m–Checkword															

*Telemetry

FIGURE 3.1.2.1–1 CCSDS PACKET FORMAT

3.1.2.2 PAYLOAD CCSDS HEADER DEFINITION

The definition of the primary and secondary headers for both the telemetry and command packets are shown in Table 3.1.2.2–1 and Table 3.1.2.2–2.

TABLE 3.1.2.2–1 SUMMARY OF CCSDS HEADER DEFINITIONS – TRANSMIT DATA HEADERS

	Description				Transmit Data Headers		
	Field	**Word #**	**Bit Offset**	**Length**	**Health & Status Data**	**Low, Medium, or High Rate Telemetry Data ***	**File Transfer (Write)**
Primary Header	Version Number	1	0	3	000	000	000
	Type		3	1	1	1	1
	Secondary Header Flag		4	1	1	1	1
	Application Process ID		5	11	Assigned by PEI using Rack Assignment and APID look–up table from Mission Build Facility	Assigned by PEI using Rack Assignment and APID look–up table from Mission Build Facility	Assigned by PEI using Rack Assignment and APID look–up table from Mission Build Facility
	Sequence Flags	2	0	2	11	11	11
	Packet Sequence Count		2	14	Real Time Assigned	Real Time Assigned	Real Time Assigned
	Packet Length	3	0	16	Real Time Assigned	Real Time Assigned	Real Time Assigned
Secondary Header	MSB of Coarse Time	4	0	16	↑	Real Time Assigned	↑
	LSB of Coarse Time	5	0	16		Real Time Assigned	
	Fine Time	6	0	8		Real Time Assigned	
	Time ID		8	2		01	
	Check Sum Word		10	1		0	
	ZOE		11	1	don't care	0	don't care
	Packet Type		12	4		0000	
	Version ID	7	0	16		Assigned by PD	
	Data Cycle Counter	8	0	16	↓	Real Time Assigned	↓

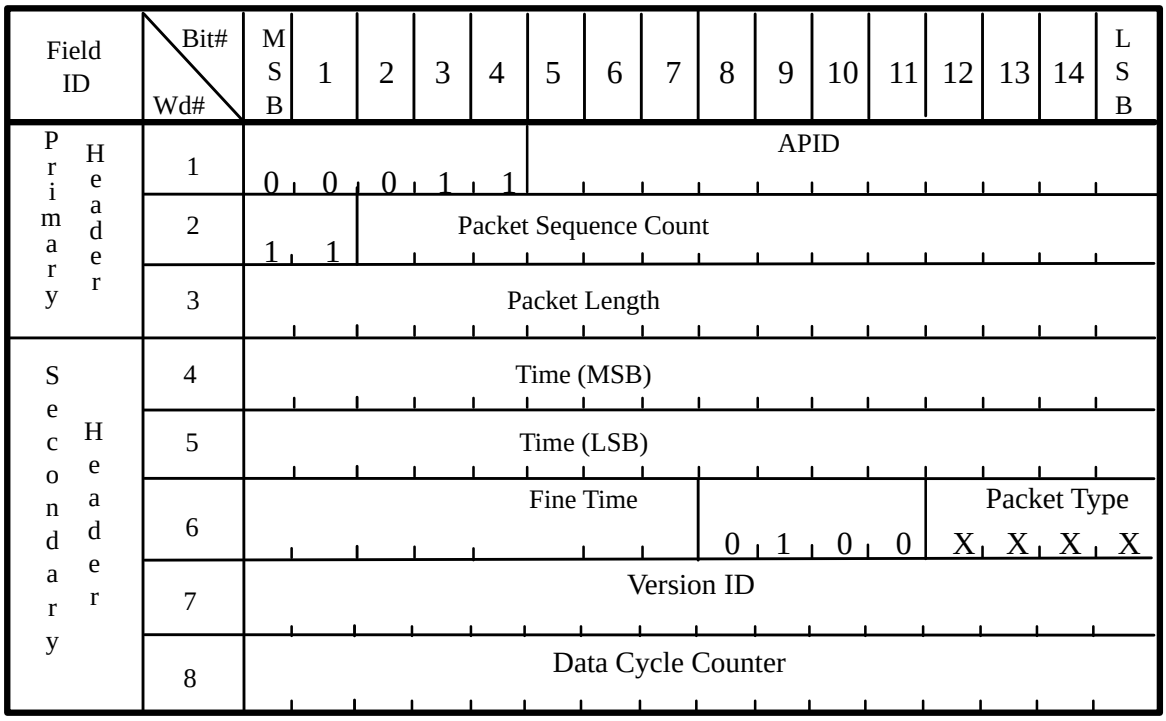
*Secondary Header required if telemetry processed at POIC

TABLE 3.1.2.2–2 SUMMARY OF CCSDS HEADER DEFINITIONS – RECEIVE DATA HEADER AND COMMAND HEADER

	Description				Receive Data Headers				Command Header
	Field	**Word #**	**Bit Offset**	**Length**	**Unique Ancillary Data**	**File Transfer (Read)**	**Broadcast Ancillary Data**	**Request Response**	
Primary Header	Version Number	1	0	3	000	000	000	000	000
	Type		3	1	1	1	0	1	1
	Secondary Header Flag		4	1	1	1	1	1	1
	Application Process ID		5	11	Assigned by PEI using Rack Assignment and APID look–up table from Mission Build Facility	Assigned by PEI using Rack Assignment and APID look–up table from Mission Build Facility	Assigned by PEI using Rack Assignment and APID look–up table from Mission Build Facility	Assigned by PEI using Rack Assignment and APID look–up table from Mission Build Facility	Assigned by PEI using Rack Assignment and APID look–up table from Mission Build Facility
	Sequence Flags	2	0	2	11	11	11	11	11
	Packet Sequence Count		2	14	Real Time Assigned	Real Time Assigned	Real Time Assigned	Real Time Assigned	Real Time Assigned
	Packet Length	3	0	16	Real Time Assigned	Real Time Assigned	Real Time Assigned	Real Time Assigned	Real Time Assigned
Secondary Header	MSB of Coarse Time	4	0	16	Real Time Assigned	Real Time Assigned	Real Time Assigned	Real Time Assigned	Real Time Assigned
	LSB of Coarse Time	5	0	16	Real Time Assigned	Real Time Assigned	Real Time Assigned	Real Time Assigned	Real Time Assigned
	Fine Time	6	0	8	Real Time Assigned	Real Time Assigned	Real Time Assigned	Real Time Assigned	Real Time Assigned
	Time ID		8	2	01	01	01	01	01
	Check Sum Word		10	1	0	0	0	0	1
	ZOE		11	1	0	0	0	0	0
	Packet Type		12	4	0111	X	0111	0100	1010
	Spare	7 (cmd)	0	1	N/A	▲	N/A	N/A	0
	Element ID		1	4	N/A		N/A	N/A	1001
	Cmd/Data Packet		5	1	N/A		N/A	N/A	0
	Spare		6	2	N/A		N/A	N/A	0
	LDP Endpoint		8	8	N/A		N/A	N/A	Assigned from D684–10056–01
	Spare	7 (data)	0	1	0		0	0	N/A
	Element ID		1	4	0001		0001	0001	N/A
	Cmd/Data Packet		5	1	1		1	1	N/A
	Version ID		6	4	0001	don't care	0001	0001	N/A
	Format ID		10	6	000000		001011	000000	N/A
	Subset ID	8 or	0	16	Assigned by PEI		N/A	Assigned by PEI	Assigned by PEI
	Spare	8	0	9	N/A		000000000	N/A	N/A
	Frame ID		9	7	N/A	▼	Real Time Assigned	N/A	N/A

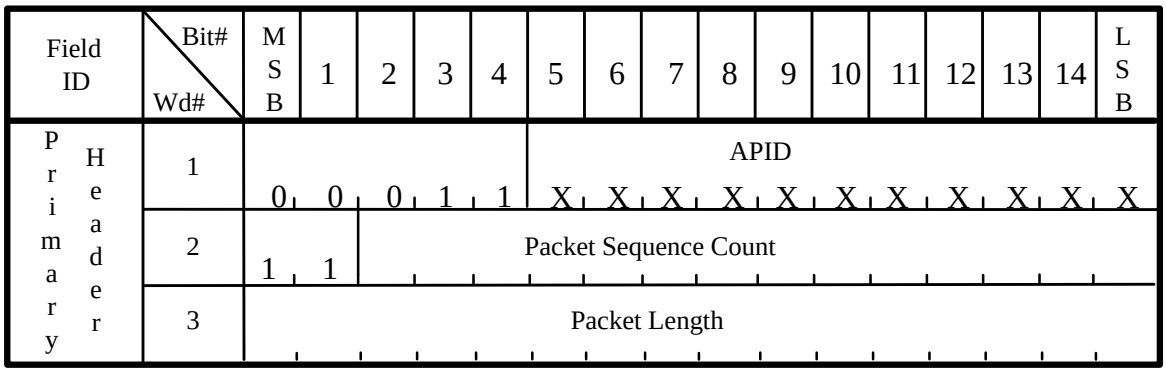
X = don't care

Examples of primary and secondary headers for both data and command packets are shown in Figure 3.1.2.2–1 through 3.1.2.2–9.



APID: (current APID value)
X: Don't Care

FIGURE 3.1.2.2–1 PAYLOAD DATA PRIMARY AND SECONDARY HEADER – TELEMETRY DATA TO MDM



APID: Don't Care

FIGURE 3.1.2.2–2 PAYLOAD DATA PRIMARY HEADER – HEALTH AND STATUS TO PAYLOAD MDM

Field ID	Bit# / Wd#	MSB	1	2	3	4	5	6	7	8	9	10	11	12	13	14	LSB
Primary Header	1	0	0	0	1	1	APID										
	2	1	1	Packet Sequence Count													
	3	Packet Length															
Secondary Header	4	Time (MSB)															
	5	Time (LSB)															
	6	Fine Time								0	1	0	0	Packet Type			
	7	0	0	0	0	1	1	0	0	0	1	Format ID					
	8	Subset ID															

APID: (current APID value)

FIGURE 3.1.2.2–3 PAYLOAD DATA HEADER – MDM TO PAYLOAD (RESPONSE TO REQUEST)

Field ID	Bit# / Wd#	MSB	1	2	3	4	5	6	7	8	9	10	11	12	13	14	LSB
Primary Header	1	0	0	0	1	1	APID										
	2	1	1	Packet Sequence Count													
	3	Packet Length															
Secondary Header	4	Time (MSB)															
	5	Time (LSB)															
	6	Fine Time								0	1	0	0	Packet Type			
	7	0	0	0	0	1	1	0	0	0	1	Format ID					
	8	Subset ID															

APID (current APID value)

FIGURE 3.1.2.2–4 PAYLOAD DATA HEADER – MDM TO PAYLOAD (UNIQUE ANCILLARY DATA)

Field ID	Bit# / Wd#	MSB	1	2	3	4	5	6	7	8	9	10	11	12	13	14	LSB
Primary Header	1	0	0	0	0	1	APID										
	2	1	1	Packet Sequence Count													
	3	Packet Length															
Secondary Header	4	Time (MSB)															
	5	Time (LSB)															
	6	Fine Time								0	1	0	0	Packet Type			
	7	0	0	0	0	1	1	0	0	0	1	0	0	Format ID			
	8	0	0	0	0	0	0	0	0	0	Frame ID						

APID: 2000

FIGURE 3.1.2.2–5 PAYLOAD DATA HEADER – MDM TO PAYLOAD (BROADCAST ANCILLARY DATA)

Field ID	Bit# / Wd#	MSB	1	2	3	4	5	6	7	8	9	10	11	12	13	14	LSB
Primary Header	1	0	0	0	1	1	APID										
	2	1	1	Packet Sequence Count													
	3	Packet Length															
Secondary Header	4	Time (MSB)															
	5	Time (LSB)															
	6	Fine Time								0	1	0	0	Packet Type			
	7	X	X	X	X	X	X	X	X	X	X	X	X	Format ID			
	8	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

APID: (current APID value)
X: Don't Care

FIGURE 3.1.2.2–6 PAYLOAD DATA HEADER – MDM TO PAYLOAD (FILE TRANSFER)

Field ID	Bit# / Wd#	MSB	1	2	3	4	5	6	7	8	9	10	11	12	13	14	LSB
Primary Header	1	0	0	0	1	1	APID										
	2	1	1	Packet Sequence Count													
	3	Packet Length															
Secondary Header	4	Time (MSB)															
	5	Time (LSB)															
	6	Fine Time								0	1	1	0	Packet Type 1	0	1	0
	7	0	0	0	0	1	0	0	0	LDP							
	8	Subset ID															

APID: (current APID value)
LDP: (current LDP value)

FIGURE 3.1.2.2–7 PAYLOAD COMMAND HEADER – UPLINK (POIC)

Field ID	Bit# / Wd#	MSB	1	2	3	4	5	6	7	8	9	10	11	12	13	14	LSB
Primary Header	1	0	0	0	1	1	APID										
	2	1	1	Packet Sequence Count													
	3	Packet Length															
Secondary Header	4	Time (MSB)															
	5	Time (LSB)															
	6	Fine Time								0	1	1	0	Packet Type 1	0	1	0
	7	0	0	0	0	1	0	0	0	LDP							
	8	Subset ID															

APID: (current APID value)
LDP: (current LDP value)

FIGURE 3.1.2.2–8 PAYLOAD COMMAND HEADER – PCS

Field ID	Bit# / Wd#	MSB	1	2	3	4	5	6	7	8	9	10	11	12	13	14	LSB
Primary Header	1	0	0	0	1	1	APID										
	2	1	1	Packet Sequence Count													
	3	Packet Length															
Secondary Header	4	Time (MSB)															
	5	Time (LSB)															
	6	Fine Time								0	1	1	0	Packet Type 1	0	1	0
	7	0	0	0	0	1	0	0	0	LDP							
	8	Subset ID															

APID: (current APID value)
LDP: (current LDP value)

FIGURE 3.1.2.2–9 PAYLOAD COMMAND HEADER – TIMELINER

3.2 LOW RATE DATA LINK

3.2.1 LRDL INTERFACE

The LRDL is comprised of two types of packets: commands and data. The payload C&DH interface to the ISS LRDL data handling system is depicted in Figure 3.2.1–1. All interfaces with the Payload MDM will be accomplished via MIL–STD–1553, Digital Time Division Command/Response Multiplex Data Bus, with the payload acting as a Remote Terminal (RT).

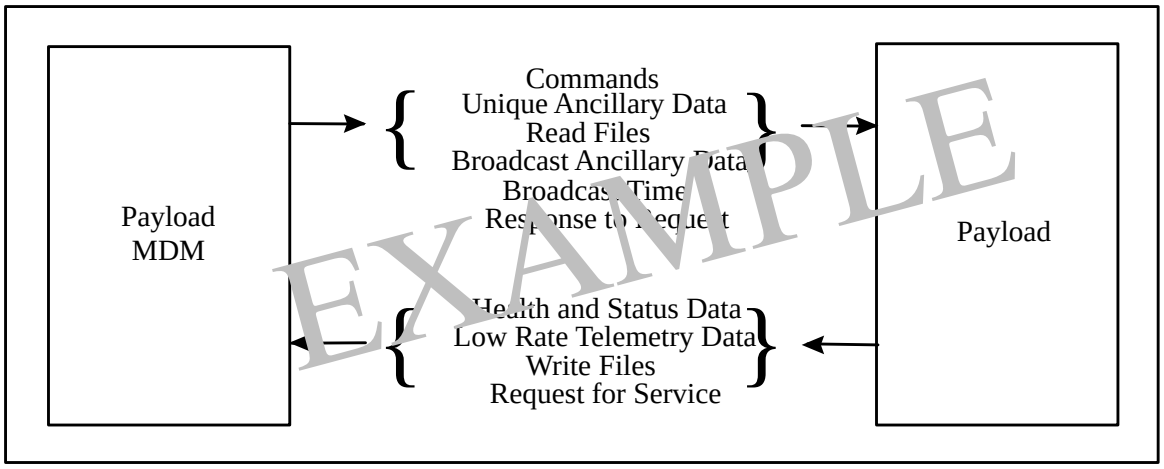


FIGURE 3.2.1–1 PAYLOAD LRDL INTERFACE TO THE C&DH SYSTEM

The PD will generate this figure to depict software interfaces required for the processing of their telemetry and commands.

3.2.2 LRDL DATA PACKETS

LRDL data packets are either a receive data packet (payload MDM to payload) or a transmit data packet (payload to payload MDM). LRDL transmit data packets are used for Low Rate Telemetry (LRT), health and status, file write, and request for service functions. LRDL receive data packets are used for file read, ancillary data, time and response to request functions.

3.2.2.1 LRDL PACKET FORMAT

The LRDL data packet must be greater than 50 words and cannot exceed 640 words. LRDL data packets are transmitted in 32 word messages. The format of the first message of the Payload LRDL data packet is shown in Figure 3.2.2.1–1.

Field ID	Bit# / Wd#	MSB	1	2	3	4	5	6	7	8	9	10	11	12	13	14	LSB
Headers	1 through 8	Header Words															
User Data	9	User Data Word # 1															
	10	User Data Word # 2															
	⋮	⋮															
	n	User Data Word # n–8															
	⋮	⋮															
	≤ 32	User Data Word # ≤ 24															

FIGURE 3.2.2.1–1 PAYLOAD LRDL DATA PACKET FIRST MESSAGE FORMAT

3.2.2.2 HEALTH AND STATUS PACKET FORMAT

The format of the payload health and status data packet with all sub–elements active is shown in Figure 3.2.2.2–1. Health and status data is collected for active sub–elements only; therefore the length of the packet will vary as sub–elements are activated/deactivated. The size of the health and status packet cannot exceed 1280 words.

Field ID	Bit# / Wd#	MSB	1	2	3	4	5	6	7	8	9	10	11	12	13	14	LSB
Headers	1 through 8	Header Words															
User Data	9	Subset ID (X)															
	10	Service Request ID															
	11	Service Request Data															
	12	Caution and Warning															
	13	Data Word 1 of Subset X															
	⋮	⋮															
	n	Data Word n_1 of Subset X															
	n+1	Subset ID (Y)															
	n+2	Service Request ID															
	n+3	Service Request Data															
	n+4	Caution and Warning															
	n+5	Data Word 1 of Subset Y															
	⋮	⋮															
	m	Data Word n_2 of Subset Y															
	m+1	Subset ID (Z)															
	m+2	Service Request ID															
	m+3	Service Request Data															
	m+4	Caution and Warning															
	m+5	Data Word 1 of Subset Z															
	⋮	⋮															
	p	Data Word n_3 of Subset Z															

FIGURE 3.2.2.2–1 PAYLOAD HEALTH AND STATUS DATA PACKET FORMAT (THREE SUB–ELEMENTS ACTIVE)

3.2.2.3 PAYLOAD LRDL CCSDS DATA PACKET DEFINITION

The Payload packet definition, conversion coefficients, and the ground processing requirements are defined in Appendix A.

3.2.2.4 ISS SUBSYSTEM ANCILLARY DATA SETS

Payloads can select from a list of existing ancillary data sets or request additional parameters to be added to a data set. Unique Ancillary Data that is required by the payload is identified in Appendix A.

The PD will complete all appropriate tables in Appendix A to define the ancillary data required by the payload.

3.2.3 LRDL COMMAND PACKETS

LRDL command packets are executable commands issued to the payload. All LRDL command packets consist of two 32–word messages. This includes CCSDS header words, spare word, legal station mode word, and checksum word as overhead and up to 53 command words.

3.2.3.1 LRDL COMMAND PACKET FORMAT

The format of a maximum length (64 words including overhead) payload LRDL command packet is shown in Figure 3.2.3.1–1. All CCSDS command packets contain a checksum as the last valid command word in the packet. The checksum is calculated by adding the set of 16 bit words and ignoring any overflow. All payload commands are padded up to 64 words by the payload MDM prior to transmission.

MESSAGE #1		
Word #	Description	Function
1	Header Word 1	CCSDS Primary Header
. . .	. . .	. . .
3	Header Word 3	CCSDS Primary Header
4	Header Word 4	CCSDS Secondary Header
. . .	. . .	. . .
8	Header Word 8	CCSDS Secondary Header
9	Spare	Spare
10	Mode	Legal Station Mode
11	Data Word 1	Command Data
.	.	.
23	Data Word 13	For minimum length command last PD defined word
24	Data Word 24/Checksum	Checksum for minimum length command
. .	. .	. .
32	Data Word 22	Command Data
MESSAGE #2		
Word #	Description	Function
1	Data Word 23	Command Data
. . .	. . .	. . .
32	Data Word 54	Checksum for maximum length command

FIGURE 3.2.3.1–1 PAYLOAD LRDL COMMAND PACKET MESSAGE FORMAT

3.2.3.2 PAYLOAD LRDL CCSDS COMMAND PACKET DEFINITION

The payload LRDL command parameters, content and packets are defined in Appendix A.

The PD will complete all appropriate tables in Appendix A to define the necessary data required for the software processing of payload commands.

3.3 MEDIUM RATE DATA LINK

3.3.1 MRDL INTERFACE

The payload software interface to the ISS MRDL data handling system is depicted in Figure 3.3.1–1. The Payload Ethernet Hub/Gateway (PEHG) is the hub for distribution of packets per ISO/IEC 8802–3, Information Technology – Local and Metropolitan Area Networks, formerly known as ANSI/IEEE 802.3.

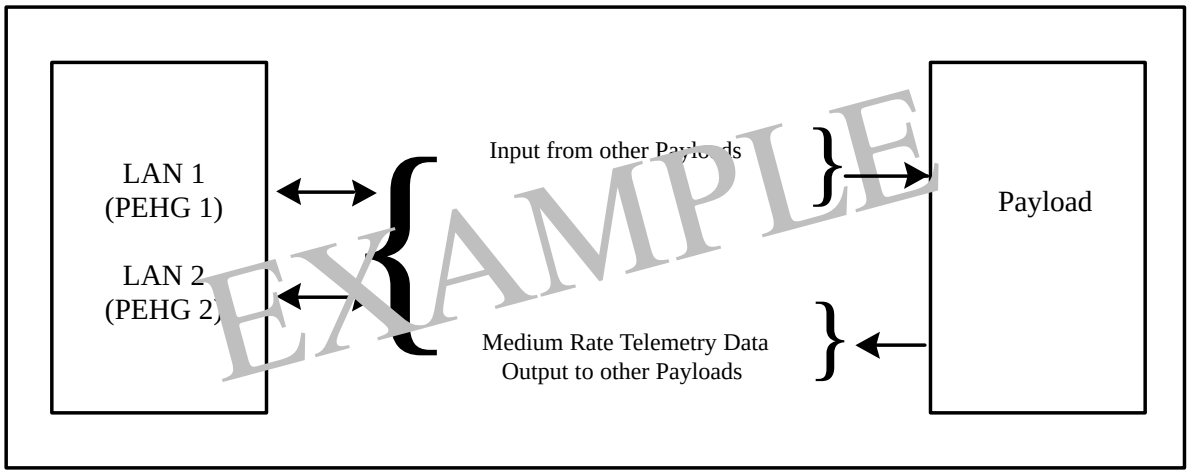


FIGURE 3.3.1–1 PAYLOAD MRDL DATA LINK INTERFACE TO THE ISS C&DH SYSTEM

The PD will generate this figure to depict the software interfaces required for the processing of their telemetry data.

3.3.2 MRDL 802.3 ETHERNET FORMAT

The MRDL 802.3 Ethernet format definition is shown in Figure 3.3.2–1.

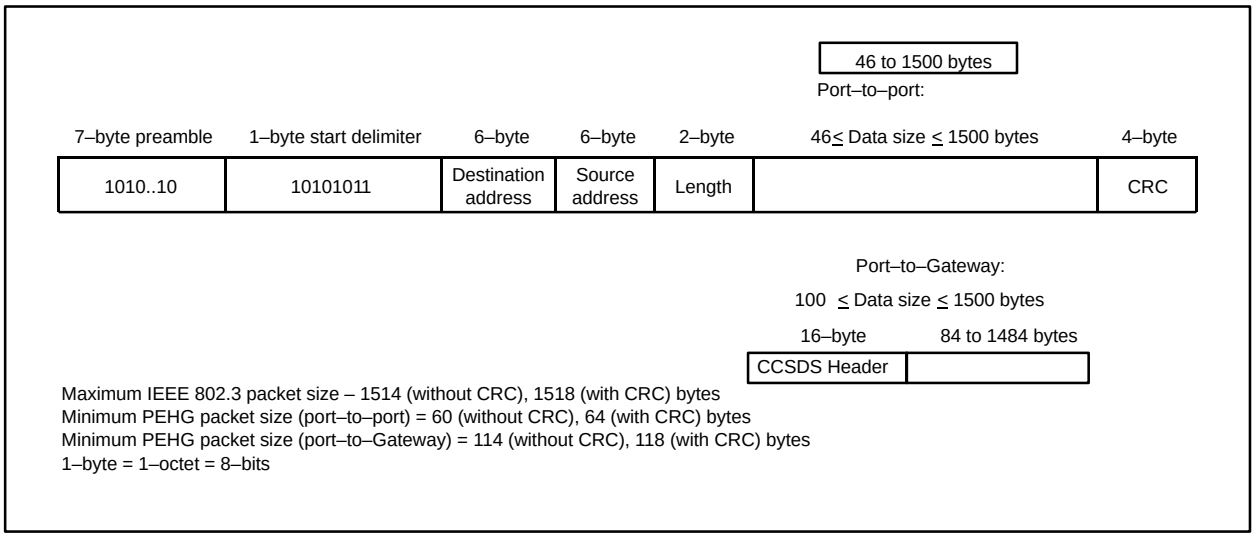


FIGURE 3.3.2–1 MRDL 802.3 ETHERNET PACKET FORMAT

3.3.3 MRDL DATA PACKETS

3.3.3.1 PAYLOAD MRDL CCSDS DATA PACKET DEFINITION

The payload MRDL telemetry data packet sizes, bit rates, and separation between packets are defined in Appendix A.

The PD will complete all appropriate tables in Appendix A to define the necessary data required for the software processing of payload telemetry data.

3.4 HIGH RATE DATA LINK

3.4.1 HRDL INTERFACE

The payload software interface to the ISS HRDL data handling system is depicted in Figure 3.4.1–1. Payload high rate data is routed to the Automated Payload Switch (APS).

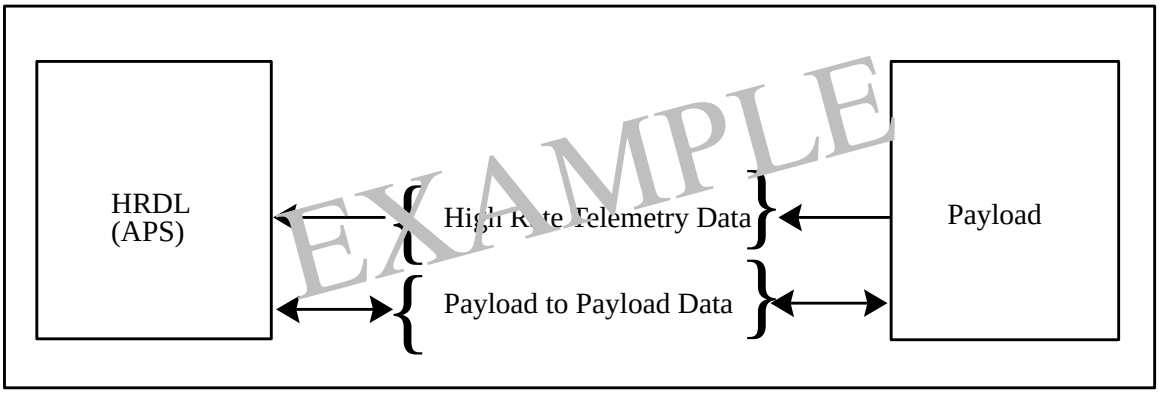


FIGURE 3.4.1–1 PAYLOAD HRDL INTERFACE TO THE ISS C&DH SYSTEM

The PD will generate this figure to depict the software interfaces required for the processing of their telemetry data.

3.4.2 HRDL DATA PACKETS

3.4.2.1 BITSTREAM FORMAT

The payload shall transmit data on the HRDL network as an unformatted series of bits containing no start or end delimiters or CCSDS packetization.

3.4.2.2 PAYLOAD HRDL CCSDS DATA PACKET FORMAT

The format definition of the HRDL CCSDS data packet is shown in Figure 3.4.2.2–1. The format includes a start delimiter (SD), end delimiter (ED), CCSDS header and data field.

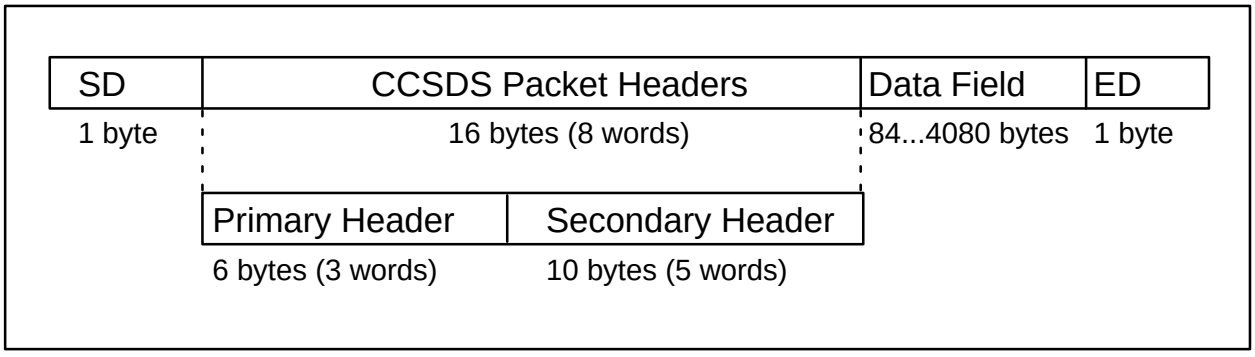


FIGURE 3.4.2.2–1 PAYLOAD HRDL DATA PACKET FORMAT

3.4.2.3 PAYLOAD HRDL CCSDS DATA PACKET DEFINITION

The payload HRDL interface is defined in Appendix A.

The PD will complete all appropriate tables in Appendix A to define the necessary data required for the software processing of payload telemetry data.

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4.0 ABBREVIATIONS AND ACRONYMS

APID	Application Process Identifier
Cal/LES	Calibration/Limit Sensing and Expected States
CCSDS	Consultative Committee for Space Data Systems
C&C	Command and Control
C&DH	Command and Data Handling
ED	End Delimiter
FD	Facility Developer
HRDL	High Rate Data Link
ICD	Interface Control Document
IEEE	Institute of Electrical and Electronics Engineers
ISO/IEC	International Organization for Standardization/International Electrotechnical Commission
ISPR	International Standard Payload Rack
ISS	International Space Station
LAN	Local Area Network
LDP	Logical Data Path
LRDL	Low Rate Data Link
LRT	Low Rate Telemetry
LSB	Least Significant Bit
MDM	Multiplexer/Demultiplexer
MRDL	Medium Rate Data Link
MSB	Most Significant Bit
PCS	Portable Computer System
PD	Payload Developer
PEHB	Payload Ethernet Hub/Bridge
PEHG	Payload Ethernet Hub/Gateway
PEI	Payload Engineering Integration
POIC	Payload Operations Integration Center
PSIV	Payload Software Integration and Verification
PUI	Program Unique Identifier
RT	Remote Terminal
SD	Start Delimiter
UOP	Utility Outlet Panel

USL	United States Lab
USOS	United States On–orbit Segment

4.1 DEFINITIONS

Ancillary Data	Ancillary Data is a collection of data which is disseminated between various ISS/Payload components.
Application Process ID	The APID is an 11 bit field within the primary header of the CCSDS Packet, which identifies a particular source and destination for commands and data.
Bitstream Data	An undelimited apparently equal weighted string of bits, which appears unstructured to a service provider.
TERM	**DEFINITION**
Byte	A byte is a set of bits representing a value and can vary in number of bits per set such as 4 bits per byte, 8 bits per byte, etc. The bytes referenced in this document are assumed to be 8 bits per byte (octet).
Consultative Committee for Space Data Systems	Consultative Committee for Space Data Systems is an organization officially established by management of member space agencies for addressing data system problems with accompanying recommended technical solutions.
Data Packets	A variable length, delimited data structure encapsulating sets of higher–layer user data within a standard header message.
High Rate Data Link	High Rate Data Link is a fiber optic network interface capable of transferring up to 100 Mbps of data point to point. The length of a CCSDS packet for a HRDL interface with the HRFM can range from 100 bytes to 4096 bytes. Payloads can also transfer data to other payloads over the HRDL and the protocols/format for transfer is up to the payloads.
Least Significant Bit	The low–order bit within a multiple bit field.

Limit Sensing	The Payload MDM–provided limit sensing feature was designed to support data sampled at a rate of 1 Hz or once per second. The parameter selected to be limit sensed is checked once per second and an out–of–limits counter will be incremented if the parameter is found to be out–of–limits. The maximum number of sequential out–of–limits checks that can be requested and performed on any one parameter is 60 for data sampled at a 1 Hz rate or 60 out–of–limit conditions in a 1 minute interval before the parameter is flagged as being in error. If the number of out–of–limits is requested to be 30, then the parameter out–of–limit flag will be set after 30 sequential out–of–limit conditions were sensed; if the condition is not sequential, the counter will reset. For 0.1 Hz data, the maximum number of sequential data checks will be 6. This is the result of the parameters being checked 10 times per second resulting in the maximum number of varying parameters only being checked 30 times (i.e. 9 stale parameters being checked every second). Data being sampled at a rate higher than 1 per second will have to use an alternate method.
Local Area Network	Local Area Network (LAN) is the Ethernet network used for MRDL data with data rates up to 10 Mbps.
Low Rate Data Link	Low Rate Data Link (LRDL) refers to data packet communications over the MIL–STD–1553 data bus.

TERM	DEFINITION
Logical Data Path	The LDP is the path used for transferring user data between a known source and destination as derived from the APID table. The management between relay points in the link are predefined by configuration tables using the APID as a reference to select the proper Path ID.
Medium Rate Data Link	Medium Rate Data Link (MRDL) refers to data packet communications over the Local Area Network (ether network) with data rates within a packet of 100 to 1500 eight bit bytes.
Most Significant Bit	The high–order bit within a multiple bit field.
Octet	A word length equal to an 8–bit byte.
Payload Ethernet Hub/Gateway	PEHG is a central hub or repeater for distributing input IEEE 802.3 packets to all active output ports.
Payload Integrator	Payload Integrator (PI) is responsible for integrating payloads into an ISPR or onto an attached carrier.
Program Unique Identifier	There are 5 basic types of Program Unique Identifiers (PUIs) used for ISS software and data systems identification. The PUIs are uniquely defined and are used for identification of (1) software requirements, (2) ISS signals generated or utilized by the design elements, (3) hardware and software devices, (4) buses utilized by the ISS MDMs and Firmware Controllers, and (5) state conversion and calibration curves required to interpret data signals.
Telemetry	A term used to characterize the generation of continuous and predictable sets of space mission measurement data which have a large interaction with overall communications resources.
Timeliner	The Timeliner is a piece of Government Furnished Software that is included in the Command and Control (C&C) MDM and the Payload MDM. It is an automated procedure executive which can be used to execute a string of commands based on both time of execution and/or logical expressions.
Timeliner Bundles	The Timeliner ”bundles” refer to the set of procedures used to control the invocation of the 1 Hz cyclic Timeliner Executor tasks.
Word	Words as used in this document consist of 16 bits.

APPENDIX A
TABLE OF CONTENTS

APPENDIX A
TABLE OF CONTENTS (Continued)

APPENDIX A
PAYLOAD TELEMETRY AND COMMAND TABLE DEFINITIONS

The definitions in Appendix A describe each field appearing in the C&DH screens, which are represented and defined by Tables A–1 thorugh A–43. In addition, Tables A–1 through A–43 define the C&DH screen numbers, names, data fields, headings, titles, descriptions, allowed range(s), and definition responsibility. The Payload Developer will provide the necessary data to define the ISS software processing requirements using these tables. These tables define the specific data parameters generated or required by the payload; the data packets transmitted or received by payload; the conversion coefficients or state codes required for displaying the data; the specific commands to control the payload; and the command data packets transmitted to the payload. The instructions for completing each table are provided followed by the applicable table format. Unshaded regions of the tables denote data fields that are to be completed by the Payload Developer, Payload Software Integration (PSI), or other ISS integration organizations. Shaded regions denote data fields that are auto populated, i.e., automatically filled in based on previous table entries.

Figure A–i identifies relationships between the tables. Tables A–0 LOGON Screen and table A–i PDL Welcome Screen query the user for relevant information regarding payload name, flight effectivity and other payload details.

Tables under the C&DH Main Tab Options heading allow the user to select from various data entry categories. Table headings A–1 through A–43 capture the relevant data for each of these categories.

- Table A–i Welcome screen is used to select the payload, flight effectivity, development level, and sub element.
- Table A–1 PL Data screen is used to define the payload sub elements, device PUI, subset id, rack assignment and network parameters.
- Table A–2 Rack Data screen is used to define the legal Logical Data Path values based on ISPR location.
- Table A–3 Param Init screen is used to initialize the Telemetry Parameters and identify the necessary processing requirements.
- Table A–4 Param Def screen is used to define the Telemetry Measurement Definitions.
- Table A–5 Ground Proc screen is used to define the HOSC/POIC Telemetry Measurements requiring Calibration Switching, Expected State or Limit Sense, LES Switching, Counter and Range Parameters.

- Table A–6 Point Pairs screen is used to define the HOSC/POIC Point Pair Calibration information.
- Table A–7 Polynomials screen is used to define the HOSC/POIC Polynomial Calibration information.
- Table A–8 State Codes screen is used to define the HOSC/POIC State Code Calibration information.
- Table A–9 Expected States screen is used to define the HOSC/POIC Expected State Services information.
- Table A–10 Limit Sensing screen is used to define HOSC/POIC LImit Sensing Services and Limit Switching information.
- Table A–11 Onboard Proc screen is used to identify the processing requirements for the ISSP onboard parameters.
- Table A–12 PLMDM screen is used to define PLMDM Limit Check Services.
- Table A–13 PCS screen is used to define the PCS Limit Sensing Services.
- Table A–14 Polynomials screen is used to define the ISSP onboard PCS Polynomial Calibration information.
- Table A–15 Linear screen is used to define the ISSP onboard PCS Linear Calibration information.
- Table A–16 LRDL screen is used to define Payload LRDL Data Packets which will be downlinked to the ground. Multiple data packets may be defined within this table.
- Table A–17 MRDL screen is used to define Payload MRDL Data Packets which will be downlinked to the ground. Multiple data packets may be defined within this table.
- Table A–18 HRDL screen is used to define Payload HRDL Data Packets which will be downlinked to the ground. Muliple data packets may be defined within this table.
- Table A–19 POIC screen is used to define the HOSC/POIC Packet Definition Format.
- Table A–20 Content Def screen is used to define the content of the packets, and Sampling information.
- Table A–21 Counter Def screen is used to define the Packet Counter information.
- Table A–22 Subset Format screen is used to define the Packet Subset Data Format information.

- Table A–23 Subset Content Def screen is used to define the Subset and Sampling information.

- Table A–24 Command Init screen is used to define all PLMDM, PCS, T/L, POIC, Laptop, and Remote Payload Commands.

- Table A–25 Command Def screen is used to define the Critical, Hazard, STD Mode, and Microgravity Mode Commands for POIC/Remote.

- Table A–26 PLMDM screen is used to identify the Shut–down, Stand–by, Start–up, and Exception Response Commands issued by the PLMDM.

- Table A–27 POIC/Remote screen is used to define Command Time Constraints, Verification Delays, and Initial States for commands issued by POIC or Remote Site.

- Table A–28 TLM Verification screen is used to define the Telemetry Verification parameters.

- Table A–29 Field Init screen is used to define the Command Header Field information.

- Table A–30 Field Def screen is sued to define the Command Definition Parameters.

- Table A–31 Point Pairs screen is used to define the Commands which require Point Pair Calibration and Calibration Switching.

- Table A–32 polynomials screen is used to define the Commands which require Polynomial Calibration and Calibration Switching.

- Table A–33 State Codes screen is used to define the Commands which require State Code Conversion and Calibration Switching.

- Table A–34 Broadcast screen is used to identify payload requirements for Broadcast Ancillary Data and Broadcast Time.

- Table A–35 Ancillary screen is used to define the payload requirement for Unique Ancillary Data Sets.

- Table A–36 FTS screen is used to define the PLMDM File transfer Services as requested by the Payload.

- Table A–37 Timeliner Def screen is used to define Timeliner bundle and sequence information.

- Table A–38 Video screen is used to define the ISSP Video Interface Requirements.

- Table A–39 Contact Info screen is used to record customer contact information.

- Table A–40 PL Info screen is used to record general payload information.
- Table A–41 Process screen is used to display C&DH Data Set Configuration Management Process.
- Table A–42 Promote screen is used to Promote/Demote C&DH data sets for rack unique Sub–element level.
- Table A–43 Drawings screen is used to view all 57002 tables and figures.

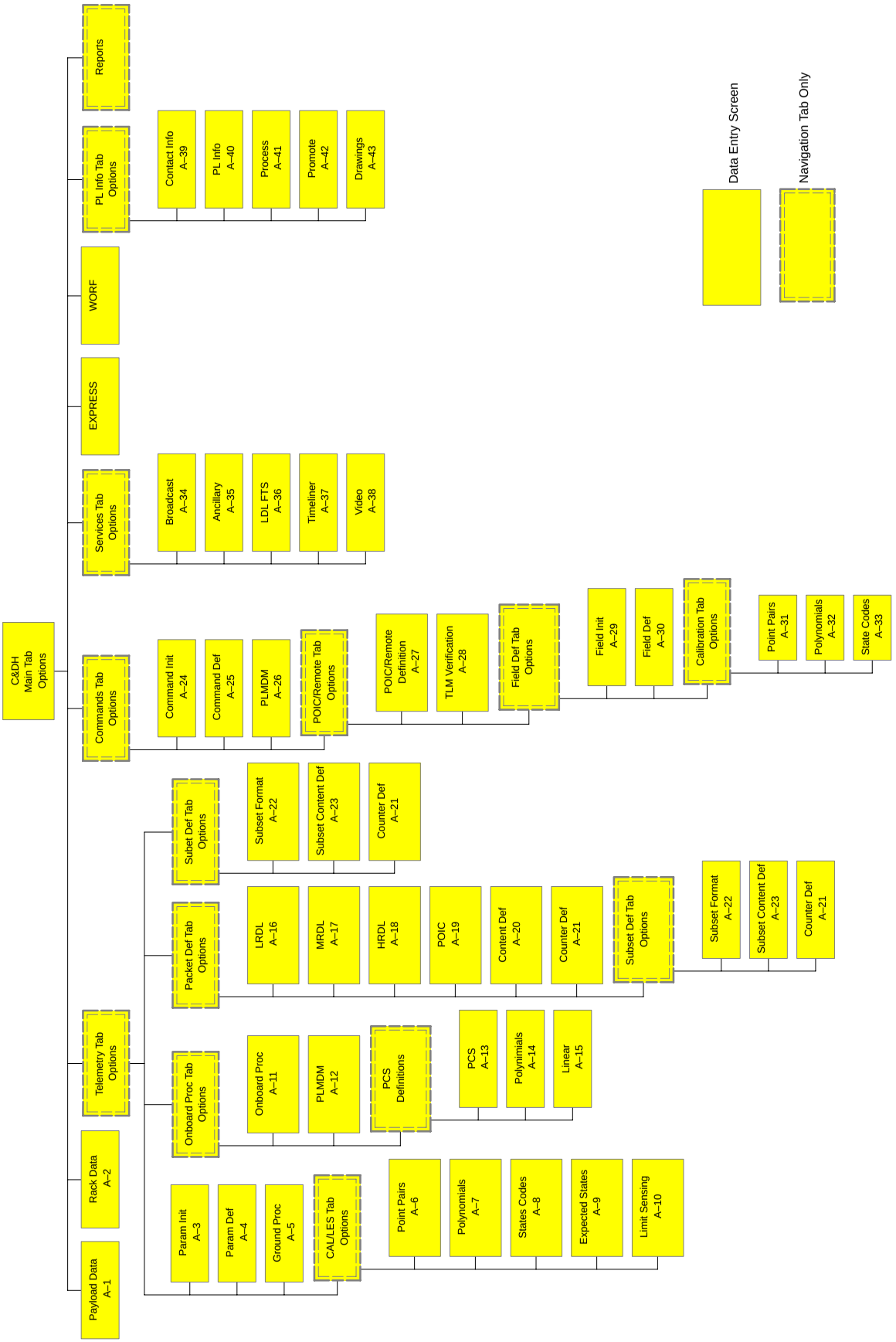

FIGURE A–i C&DH TABLE RELATIONSHIPS AND FLOW CHART (1 OF 1)

TABLE A–i INSTRUCTIONS FOR COMPLETING PAYLOAD SELECTION WELCOME SCREEN
(Page 1 of 1)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Payload			Select a Payload Rack manifested to fly in the Pressurized Segment, or Attached Payloads from the list of the four categories: All, EXPRESS, Pressurized or WORF.	Auto populated from a valid list of Payloads	PD
Increment			Select the increment number to indicate the assignment of crew functions and tasks for specified flights.	Auto populated from a valid list of increment values	PD
Flight			Select the flight number for the selected Payload. Changes to the payload between flights that will be maintained in the same database and this field provides a means of determining which parameters pertain to a specific flight. Also this field will provide a means for configuration management of changes occurring after turnover of payload to launch provider (e.g. 7A.1, UF1, UF2, 1J/A).	Auto populated from a valid list of flights	PD
Launch Date			Consist of the launch date for the selected payload, increment and flight.	Auto populated from a valid list of launch dates	Program Office
L–Minus From Today			Consist of the C&DH CM Process L–Minus stage.	Auto Populated	DSM

SCREEN A–i PAYLOAD SELECTION WELCOME SCREEN
(Screen 1 of 1)

Payload	
Increment	
Flight	
Launch Date	
L–Minus From Today	

TABLE A–1 INSTRUCTIONS FOR COMPLETING PL DATA SCREEN A–1
(Page 1 of 3)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Payload	Character	80	This field is defined from the Payload Selection Welcome Screen or the user can select another Flight from the provided list.	Auto populated from a valid list of Payloads from the Payload Selection Welcome screen	PDL
Acronym (Payload Acronym)	Character	15	Displays a valid payload acronym.	Auto populated from a valid list of payload acronyms according to section of: Payload, increment, flight, and user access.	PDL/PD
PL/ID (Payload Identifier)	Character	10	Displays a valid payload.	Auto populated from a payload from a valid list according to section of: Payload, increment, flight, and user access.	PDL/Program Office
Flight Effectivity	Character	10	This field is defined from the Payload Selection Welcome Screen or the user can select another Flight from the provided list.	None	PDL
Development Level	Character	11	Select a data development level for the selected payload. Choose from Preliminary, Interim, Final, or Post Flight.	Preliminary, Interim, Final, and Post Flight	PDL
Control Level	Number	12	Displays Private, Integrated, or Baslined.	Auto populated from a valid list of control levels according to section of: Payload, increment, flight, and user access.	PDL
Payload/Sub Element	Character	20	Enter the alphanumeric identification code assigned to each unique payload sub element. Must be unique for PDL.	Alphanumeric	PD
Title	Character	60	Enter the description of the sub payload.	Alphanumeric	PD
Element	Character	2	Enter the first two characters that represent the functional flight Element of the ISS signal data, which is identified as Field 1 of a thirteen character signal Program Unique Identifier (PUI). The first character must be ALPHABETICAL and the second character must be ALPHANUMERIC.	A set of legal values to encode this field is listed in Appendix A of D684–10056–01 Rev. K.	DSM

TABLE A–1 INSTRUCTIONS FOR COMPLETING PL DATA SCREEN A–1
(Page 2 of 3)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Functional System	Character	1	Enter Z as the third character, which represents the Functional System of the ISS signal data. Currently Z is used for all ISSP payloads. The third character must be ALPHABETICAL.	A set of legal values to encode this field is listed in Appendix B of D684–10056–01 Rev. K.	DSM
Group Assembly	Character	3	Enter the fourth, fifth, and sixth characters that represent the Subsystem / Assembly / CSCI within the element/functional system of the ISS signal data, which is identified as Field 3 of a thirteen character signal Program Unique Identifier (PUI). The fourth character must be ALPHABETICAL, fifth and sixth must be NUMERIC.	The first six characters of the signal PUI are listed in Appendix C of D684–10056–01 Rev. K. Section 3.3.1.3 identifies how legal values are encoded.	DSM
Generic Device Code	Character	2	Enter the seventh and eight characters that represent the Generic Device Code of the ISS signal data, which is identified as Field 4 of a thirteen character signal Program Unique Identifier (PUI). The seventh and eight characters must be ALPHABETICAL.	A set of legal values to encode this field is listed in Appendix D of D684–10056–01 Rev. K.	DSM
Subset ID	Number	5	A numeric identifier of the payload/sub–rack payload. This is the value that will be inserted into word eight of the CCSDS header for transmitted data of commands to this payload.	0–65535	DSM
PL Index	Number	3	Payload identifier used by the PLMDM to reference payloads.	0–200	PSIV
Rack Assignment	Character	15	Facility/EXPRESS rack assignment for the subrack payload.	EXPRESS Racks	DSM
LAN–1 Rack to Rack Source Address	Character	17	Enter the Payload Ethernet MAC source address for the LAN–1 rack–to–rack interface.	00 00 00 00 00 00 – FF FF FF FF FF FF ring hex notation	PD
LAN–1 Rack to Rack Source Buffer Size	Number	5	Enter the size of the buffer used to store Payload downlink data during LAN–1 Ethernet bus contention.	0–99999 decimal (kbytes)	PD
LAN–2 Rack to Rack Source Address	Character	17	Enter the Payload Ethernet MAC source address for the LAN–2 rack–to–rack interface.	00 00 00 00 00 00 – FF FF FF FF FF FF ring hex notation	PD

TABLE A–1 INSTRUCTIONS FOR COMPLETING PL DATA SCREEN A–1
(Page 3 of 3)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
LAN–2 Rack to Rack Source Buffer Size	Number	5	Enter the size of the buffer used to store incoming Payload downlink data during LAN–1 Ethernet bus contention.	0–99999 decimal (kbytes)	PD
LAN–1 Rack to Rack Destination Address	Character	17	Enter the Payload Ethernet MAC destination address for the LAN–1 rack–to–rack interface.	00 00 00 00 00 00 – FF FF FF FF FF FF ring hex notation	PD
LAN–1 Rack to Rack Destination Max Acceptance Latency	Number	5	Enter the maximum acceptable message delay for downlink data from the Payload via LAN–1 MRDL.	1–99999 or blank (no requirement) (milliseconds)	PD
LAN–2 Rack to Rack Destination Address	Character	17	Enter the Payload Ethernet MAC destination address for the LAN–2 rack–to–rack interface.	00 00 00 00 00 00 – FF FF FF FF FF FF ring hex notation	PD
LAN–2 Rack to Rack Destination Max Acceptance Latency	Number	5	Enter the maximum acceptable message delay for downlink data from the Payload via LAN–2 MRDL.	1–99999 or blank (no requirement) (milliseconds)	PD

SCREEN A–1 PL DATA
(Screen 1 of 1)

Payload	
Acronym	
PL/ID	
Flight Effectivity	
Development Level	
Control Level	

PAYLOAD / SUB ELEMENTS								
Payload / Sub Element	Title	DEVICE PUI				Subset ID	PL Index	Rack Assignment
		Element	Functional System	Group Assembly	Generic Device Code			

RACK TO RACK SOURCE			RACK TO RACK DESTINATION		
	LAN 1	LAN 2		LAN 1	LAN 2
ADDRESS			ADDRESS		
BUFFER SIZE			MAX ACCEPTANCE LATENCY		

TABLE A–2 INSTRUCTIONS FOR COMPLETING RACK DATA SCREEN A–2
(Page 1 of 3)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Rack	Character	80	Enter or select the Rack from the list of rack names.	Auto populated from a valid list of Racks for user selection.	PD
Acronym (Payload Acronym)	Character	15	Displays a valid payload acronym.	Auto populated from a valid list of payload acronyms according to section of: Payload, flight, and user access.	PD
PL/ID (Payload Identifier)	Character	10	Displays a valid payload.	Auto populated from a payload from a valid list according to section of: Payload, flight, and user access.	PDL/Program Office
Flight Affectivity	Character	10	This field is defined from the Payload Selection Welcome Screen or the user can select another Flight from the provided list.	none	PD
Development Level	Character	11	Select a data development level for the selected payload. Choose from Preliminary, Interim, Final, or Post Flight.	Preliminary, Interim, Final, and Post Flight	PD
Control Level	Character	12	Displays Private, Integrated, or Baselined.	Auto populated from a valid list of control levels according to section of: Payload, flight, and user access.	PD
LDP	Number	3	Enter the payload Logical Data Path (LDP) value.	The LDP value can be obtained in Appendix U of D684–10056 Rev. K.	PD
Location	Character	15	Displays the rack location of the payload.	Auto populated from a list of valid LDP values.	PD
Internet Protocol Address Range	Character	15	Enter the range of Internet Protocol addresses in dot notation used by this payload from lowest to highest.	xxx.xxx.xxx.xxx–xxx Four groups with a range of 1–255 for each group.	PD
Payload	Character	10	Displays the payload that was entered on A–1.	Auto populated from a payload from a valid list according to section of: Payload, increment, flight, and user access.	PD

TABLE A–2 INSTRUCTIONS FOR COMPLETING RACK DATA SCREEN A–2
(Page 2 of 3)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Payload/Sub element	Character	20	Displays alphanumeric identification code that was entered on A–1.	Auto populated from A–1 Payload/ Sub element field assigned to each unique payload sub element. Must be unique for PDL.	PD
Title	Character	60	Title description of the sub payload that was entered on A–1	Auto populated from A–1 Title field	PD
Element	Character	2	First two characters of PUI value that entered on A–1	Auto populated from A–1 Element field	DSM
Functional System	Character	1	Third character of PUI value that was entered on A–1.	Auto populated from A–1 Functional System field	DSM
Group Assembly	Character	3	Fourth, fifth, and sixth characters of PUI value that was entered on A–1.	Auto populated from A–1 Group Assembly field	DSM
Generic Device Code	Character	2	Seventh and eighth characters of PUI value that was entered on A–1.	Auto populated from A–1 Generic Device Code field	DSM
Subset ID	Number	5	Numeric identifier of the payload/sub–rack payload that was entered on A–1.	Auto populated from A–1 Value range is 0–65535	DSM
PL Index	Number	3	Payload identifier entered on A–1.	Auto populated from A–1 Value range is 0–200	PSIV
Remote Terminal Address	Character	2	Enter the Remote Terminal wired address of the MIL–STD–1553 local bus.	8–28 decimal	PD
Remote Terminal Buffer Size	Number	5	Enter the buffer size of the Remote Terminal.	0–99999	PD
Remote Terminal Max Acceptance Latency	Number	5	Enter the maximum acceptance latency for the transmitted data from the payload via LRDL.	1–99999 decimal or blank (no requirement) (milliseconds)	PD
Gateway Destination LAN–1 Address	Character	17	Enter the Payload Ethernet MAC source address for the LAN–1 Gateway interface.	00 00 00 00 00 00 – FF FF FF FF FF FF ring hex notation	PD

TABLE A–2 INSTRUCTIONS FOR COMPLETING RACK DATA SCREEN A–2
(Page 3 of 3)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Gateway Destination LAN–1 Buffer Size	Number	5	Enter the size of the buffer used to store incoming Payload downlink data.	0–99999 decimal (kbytes)	PD
Gateway Destination LAN–1 Max Acceptance Latency	Number	5	Enter the maximum acceptable message delay for downlink data from the Payload via LAN–1 MRDL.	1–99999 or blank (no requirement) (milliseconds)	PD
Gateway Destination LAN–2 Address	Character	17	Enter the Payload Ethernet MAC destination address for the LAN–2 Gateway interface.	00 00 00 00 00 00 – FF FF FF FF FF FF ring hex notation	PD
Gateway Destination LAN–2 Buffer Size	Number	5	Enter the size of the buffer used to store incoming Payload downlink data.	0–99999 decimal (kbytes)	PD
Gateway Destination LAN–2 Max Acceptance Latency	Number	5	Enter the maximum acceptable message delay for downlink data from the Payload via LAN–2 MRDL.	1–99999 or blank (no requirement) (milliseconds)	PD
Gateway Source LAN–1 Address	Character	17	Enter the Payload Ethernet MAC source address for the LAN–1 interface.	00 00 00 00 00 00 – FF FF FF FF FF FF ring hex notation	PD
Gateway Source LAN–1 Buffer Size	Number	5	Enter the size of the buffer used to store incoming Payload downlink data during LAN–1 Ethernet bus contention.	0–99999 decimal (kbytes)	PD
Gateway Source LAN–2 Address	Character	17	Enter the Payload Ethernet MAC source address for the LAN–2 interface.	00 00 00 00 00 00 – FF FF FF FF FF FF ring hex notation	PD
Gateway Source LAN–2 Buffer Size	Number	5	Enter the size of the buffer used to store incoming Payload downlink data during LAN–2 Ethernet bus contention.	0–99999 decimal (kbytes)	PD

SCREEN A–2 RACK DATA
(Screen 1 of 1)

Rack	
Acronym	
PL/ID	
Flight Effectivity	
Development Level	
Control Level	

LOGICAL DATA PATH	
LDP	
Location	
Internet Protocol Range	

PAYLOAD/SUB ELEMENTS								
Payload	Payload/ Sub Element	Title	DEVICE PUI				Subset ID	PL Index
			Element	Functional System	Group Assembly	Generic Device Code		

REMOTE TERMINAL		GATEWAY DESTINATION		GATEWAY SOURCE	
		LAN–1	LAN–2	LAN–1	LAN–2
Address					
Buffer Size					
Max Acceptance Latency					

TABLE A–3 INSTRUCTIONS FOR COMPLETING PARAM INIT SCREEN A–3
(Page 1 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
PCN	Character	7	DESCRIPTION FIELD: Enter the Parameter Correlation Number (PCN), which is a unique identifier for each measurement. The first three characters should be an alphanumeric identifier and will be used to group associated payload measurements. The remaining four characters will be numeric. The numeric values can be any four–digit positive integer numbers. The starting and ending values can be any consecutive series of four–digit positive integer numbers. For example: Starting value can be 0001 and ending value 1000. In addition, the user can assign two or more groups of four–digit consecutive numeric series (i.e. 0001–1000, 1001–2000, 2001–3000, etc.). The user can use any group(s) of four–digit positive integer numbers and delete any individual number within the number group. Sequential and non–sequential numbers are allowed within any group of numbers. Hence, providing a coherent basis of numbers for assignment of unique PCN identifiers.	ALLOWED RANGE FIELD: Starting and Ending ranges can consist of the following: 0001 through 1000, 1001 through 2000, 2001 through 3000, etc.	PD
Name	Character	89	Enter a unique name to identify the PCN parameter.	none	PD
Description	Character	250	Enter the complete text that describes the generated payload data.	Alphanumeric	PD
Device	Character	8	Primitive PUI Device values (Element, Functional System, Group Assembly, Generic Device Code) that were entered in table A–1	Auto populated from A–1. Values, which consist of following fields: Element, Functional System, Group Assembly, and Generic Device Code.	DSM
Seq Num	Character	4	Enter the ninth, tenth, eleventh and twelfth characters that represent the unique alphanumeric Sequence Number within the ISS signal data, which is identified as Field 5 of a thirteen character signal Program Unique Identifier (PUI).	A set of legal values assigned at the discretion of the data provider. Numeric values are preferred for the sequence number, but alphabetical characters are allowed.	DSM

TABLE A–3 INSTRUCTIONS FOR COMPLETING PARAM INIT SCREEN A–3
(Page 2 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Signal Type	Character	1	Enter the thirteenth character that represents the Signal Type of the ISS signal data, which is identified as Field 6 of a thirteen character signal Program Unique Identifier (PUI).	A set of legal values to encode this field is listed in Appendix F of D684–10056–01 Rev. K.	DSM
Health & Status	Character	1	Check this box if this parameter is a Health & Status; otherwise leave blank. This flag indicates that this parameter is part of the Health & Status produced by the payload and must have the Processed POIC box checked.	If checked, then Timeliner (T/L), SCREEN A–11, flag is also checked.	PD
Safety Data	Character	1	Check this box if this parameter is a Safety parameter; otherwise leave blank. This flag indicates that this parameter is safety related. If this box is checked, then the Health & Status and T/L boxes will be auto checked.	None	PD
Processed Onboard	Character	1	Check this box if this parameter will be processed by the PLMDM or PCS; otherwise leave blank. If this box is checked, then the Health & Status and T/L (Screen A–11) boxes will be auto checked.	None	PD
Processed POIC	Character	1	Check this box if this parameter will be processed at the HOSC/POIC, otherwise leave blank. If this box is checked, then the Health and Status and T/L (Screen A–11) boxes will be auto checked.	None	PD
Shuttle MPLM	Character	1	Check this box if this parameter will be viewed by or passed through the MPLM (Shuttle).	None	PD

SCREEN A–3 PARAM INIT
(Screen 1 of 1)

PARAMETERS										
PCN	NAME	DE-SCRIPTION	PRIMITIVE PUI			HEALTH & STATUS	SAFETY DATA	PROCESSED		SHUTTLE MPLM
			Device	SeqNum	Signal Type			Onboard	POIC	

TABLE A–4 INSTRUCTIONS FOR COMPLETING PARAM DEF SCREEN A–4
(Page 1 of 1)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
PCN	Character	7	Displays PCN (Parameter Correlation Number) identifier on A–3.	Auto populated from A–3 with a unique identifier parameter PCN.	PD
Name	Character	89	Displays unique name to identify the PCN parameter that was entered on A–3.	Auto populated from A–3 with a unique identifier parameter name.	PD
Cal Type	Character	2	Enter the type of calibration conversion process.	N – No calibration PC – Polynomial Calibration PP – Point Pair Calibration SC – State Code Calibration	PD
Data Type	Character	5	Enter the Data Type that defines how data is represented and how data is to be processed.	See MSFC–1274 Appendix B for description	PD
Total Length	Number	4	Enter the total data length this parameter to establish the raw count size.	See Validation data in 57002 Appendix B.	PD
Bytes/Bits	Character	5	Displays the calculated byte or bit size for the raw counts.	Auto populated with proper data type size in bytes or bits.	PD
Engineering Units	Character	10	Enter the engineering units associated with this calibration set for the parameter.	None	PD
Low Raw Count	Number	12	Enter the decimal number corresponding to the minimum expected binary count. Does not apply to floating points or character strings.	None	PD
High Raw Count	Number	12	Enter the decimal number corresponding to the maximum expected binary count. Does not apply to floating points or character strings.	None	PD

SCREEN A–4 PARAM DEF
(Screen 1 of 1)

PARAMETERS								
PCN	NAME	CALIBRA-TION TYPE	DATA TYPE	TOTAL LENGTH	BYTE / BITS	ENGINEER-ING UNITS	LOW RAW COUNTS	HIGH RAW COUNTS

TABLE A–5 INSTRUCTIONS FOR COMPLETING GROUND PROC SCREEN A–5
(Page 1 of 1)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
PCN	Character	7	Displays PCN (Parameter Correlation Number) identifier on A–3.	Auto populated from A–3 with a unique identifier parameter PCN.	PD
Name	Character	89	Displays unique name to identify the PCN parameter that was entered on A–3.	Auto populated from A–3 with a unique identifier parameter name.	PD
Cal Type	Character	2	Displays the type of calibration conversion process from A–4.	Auto populated from A–4. Calibration	PD
Data Type	Character	5	Displays the Data Type from A–4.	Auto populated from A–4.	PD
Engineering Units	Character	10	Displays the engineering units of the calibration set from A–4.	Auto populated from A–4.	PD
Proprietary	Character	1	Check this box if this parameter requires sensitive (medical related data.)	If the Proprietary flag is checked, then H&S flag can not be checked.	PD
Calibration Switch	Character	1	Check this box if Calibration Switching is required.	If checked, then Cal Type value must be: PC, PP, or SC.	PD
Expected State	Character	1	Check this box if Expected State is required	If checked, then Limit Sense Box unchecked and CAL TYPE=SC.	PD
Limit Sense	Character	1	Check this box if Limit Sensing is required.	If checked, then Expected State Box unchecked and CAL TYPE does not =SC.	PD
LES Switch	Character	1	Check this box if LES is required.	If checked, then Expected State is checked and Limit Sense unchecked. OR, Limit Sense is checked and Expected State unchecked	PD
Parameter Counter	Character	1	Check this box if this parameter will be used as incrementing or decrementing telemetry counter.	If checked, then Parameter Range Box unchecked.	PD
Parameter Range	Character	1	Check this box if this parameter will be used as a range of telemetry values.	If checked, then Parameter Counter Box unchecked	PD

SCREEN A–5 GROUND PROC
(Screen 1 of 1)

PARAMETERS												
PCN	Name	Calibration Type	Data Type	Eng. Units	Proprietary	Calibration Switch	Expected State	OR	Limit Sense	LES Switch	Parameter	
											Counter	Range

TABLE A–6 INSTRUCTIONS FOR COMPLETING POINT PAIRS SCREEN A–6
(Page 1 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
PCN	Character	7	Displays PCN (Parameter Correlation Number) identifier on A–3.	Auto populated from A–3 with a unique identifier parameter PCN.	PD
Name	Character	89	Displays unique name to identify the PCN parameter that was entered on A–3.	Auto populated from A–3 with a unique identifier parameter name.	PD
Device	Character	8	Displays Primitive PUI Device values (Element, Functional System, Group Assembly, Generic Device Code) that were entered in table A–1	Auto populated from A–1.	DSM
Seq Num	Character	4	Displays Primitive PUI Sequence Numbers that were entered on A–3. (PUI).	Auto populated from A–3.	DSM
Signal Type	Character	1	Displays Primitive PUI Signal Type value that was entered on A–3.	Auto populated from A–3.	DSM
Data Type	Character	5	Displays the Data Type from A–4.	Auto populated from A–4.	PD
Engineering Units	Character	10	Displays the engineering units of the calibration set from A–4.	Auto populated from A–4.	PD
Cal SW PCN	Character	7	Enter the unique Calibration Switching PCN parameter.	None	PD
Cal Switch Primitive PUI	Character	13	Displays the Primitive PUI Device values associated with its Calibration Switching PCN. If blank, no calibration switching is performed.	Auto populated if the Primitive PUI exist for the specific PCN.	PD
Low Range	Number	31,15	Enter the low end of the range in engineering units for the calibration switch measurement. See MSFC–DOC–1949C, Vol. 4, Section 2.12, Measurement Table and 2.19, Calibration Switch Table.	None	PD
High Range	Number	31,15	Enter the high end of the range in engineering units for the calibration switch measurement. See MSFC–DOC–1949C, Vol. 4, Section 2.12, Measurement Table and 2.19, Calibration Switch Table.	None	PD

TABLE A–6 INSTRUCTIONS FOR COMPLETING POINT PAIRS SCREEN A–6
(Page 2 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
State Code	Character	12	Enter the state conversion code of the calibration switch measurement when the data is within the state code conversion measurement.	None	PD
Default Set Number	Number	2	Enter the set number of the default calibration set. If calibration switching was not selected, then the default set number can only be 1.	Min=1 Max=32	PD
Set Number	Number	2	Enter the unique number for each set of point pairs. If calibration switching was not selected, then the default set number can only be 1.	Min=1 Max=32	PD
Sequence Number	Number	2	Enter the unique number for each point pair within a calibration set.	Min=1 Max=21	PD
Pair Count	Number	12	Enter the decimal integer representing the raw count value of the point pair.	None	PD
Pair Value	Number	31,15	Enter the engineering unit equivalent of the Pair Count. Include sign and decimal point, if applicable. See MSFC–DOC–1949C, Vol. 4, Section 2.17, Point Pair Table.	None	PD

SCREEN A–6 POINT PAIRS
(Screen 1 of 1)

PARAMETERS						
PCN	Name	Primitive PUI			Data Type	Eng Units
		Device	Seq Num	Signal Type		

Cal Switch PCN			
Cal Switch Primitive PUI			
Low Range			
High Range			
State Code			

POINT PAIRS				
Default Set Number	Set Number	Sequence Number	Pair Count	Pair Value

TABLE A–7 INSTRUCTIONS FOR COMPLETING POLYNOMIALS SCREEN A–7
(Page 1 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
PCN	Character	7	Displays PCN (Parameter Correlation Number) identifier on A–3.	Auto populated from A–3 with a unique identifier parameter PCN.	PD
Name	Character	89	Displays unique name to identify the PCN parameter that was entered on A–3.	Auto populated from A–3 with a unique identifier parameter name.	PD
Device	Character	8	Displays Primitive PUI Device values (Element, Functional System, Group Assembly, Generic Device Code) that were entered in table A–1	Auto populated from A–1.	DSM
Seq Num	Character	4	Displays Primitive PUI Sequence Numbers that were entered on A–3. (PUI).	Auto populated from A–3.	DSM
Signal Type	Character	1	Displays Primitive PUI Signal Type value that was entered on A–3.	Auto populated from A–3.	DSM
Data Type	Character	5	Displays the Data Type from A–4.	Auto populated from A–4.	PD
Engineering Units	Character	10	Displays the engineering units of the calibration set from A–4.	Auto populated from A–4.	PD
Cal SW PCN	Character	7	Enter the unique Calibration Switching PCN parameter.	None	PD
Cal Switch Primitive PUI	Character	13	Displays the Primitive PUI Device values associated with its Calibration Switching PCN. If blank, no calibration switching is performed.	Auto populated if the Primitive PUI exist for the specific PCN.	PD
Low Range	Number	31,15	Enter the low end of the range in engineering units for the calibration switch measurement. Reference MSFC–DOC–1949C, Vol. 4, Section 2.16, Polynomial Calibration Table.	None	PD
High Range	Number	31,15	Enter the high end of the range in engineering units for the calibration switch measurement. Reference MSFC–DOC–1949C, Vol. 4, Section 2.16, Polynomial Calibration Table.	None	PD
State Code	Character	12	Enter the state conversion code of the calibration switch measurement when the data is within the state code conversion measurement.	None	PD

TABLE A–7 INSTRUCTIONS FOR COMPLETING POLYNOMIALS SCREEN A–7
(Page 2 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Def. Set Number	Number	2	Enter the set number of the default calibration set. If calibration switching was not selected, then the default set number can only be 1.	Min=1 Max=32	PD
Degree	Number	1	Enter the degree number of the polynomial equation.	Min=1 Max=9	PD
Low Range	Number	31,15	Enter the minimum data value of the parameter converted to engineering units. Reference MSFC–DOC–1949C, Vol. 4, Section 2.16, Polynomial Calibration Table.	None	PD
High Range	Number	31,15	Enter the maximum data value of the parameter converted to engineering units. Reference MSFC–DOC–1949C, Vol. 4, Section 2.16, Polynomial Calibration Table.	None	PD
C0	Character	16	Enter the signed mantissa and signed exponent.	Example: +400217.E–01	PD
C1	Character	16	Enter the signed mantissa and signed exponent.	Example: +400217.E–01	PD
C2	Character	16	Enter the signed mantissa and signed exponent.	Example: +400217.E–01	PD
C3	Character	16	Enter the signed mantissa and signed exponent.	Example: +400217.E–01	PD
C4	Character	16	Enter the signed mantissa and signed exponent.	Example: +400217.E–01	PD
C5	Character	16	Enter the signed mantissa and signed exponent.	Example: +400217.E–01	PD
C6	Character	16	Enter the signed mantissa and signed exponent.	Example: +400217.E–01	PD
C7	Character	16	Enter the signed mantissa and signed exponent.	Example: +400217.E–01	PD
C8	Character	16	Enter the signed mantissa and signed exponent.	Example: +400217.E–01	PD
C9	Character	16	Enter the signed mantissa and signed exponent.	Example: +400217.E–01	PD

SCREEN A–7 POLYNOMIALS
(SCREEN 1 OF 3)

PARAMETERS						
PCN	Name	Primitive PUI			Data Type	Eng Units
		Device	Seq Num	Signal Type		

CALIBRATION SWITCHING			
Cal SW PCN			
Cal Switch Primitive PUI			
Low Range			
High Range			
State Code			

POLYNOMIALS				
Default Set Number	Set Number	Degree	Low Range	High Range

COEFFICIENTS		
C0	C1	C2

SCREEN A–7 POLYNOMIALS
(SCREEN 2 OF 3)

PARAMETERS						
PCN	Name	Primitive PUI			Data Type	Eng Units
		Device	Seq Num	Signal Type		

CALIBRATION SWITCHING			
Cal Switch PCN			
Cal Switch Primitive PUI			
Low Range			
High Range			
State Code			

POLYNOMIALS				
Default Set Number	Set Number	Degree	Low Range	High Range

COEFFICIENTS		
C3	C4	C5

SCREEN A–7 POLYNOMIALS
(SCREEN 3 OF 3)

PARAMETERS						
PCN	Name	Primitive PUI			Data Type	Eng Units
		Device	Seq Num	Signal Type		

CALIBRATION SWITCHING			
Cal Switch PCN			
Cal Switch Primitive PUI			
Low Range			
High Range			
State Code			

POLYNOMIALS				
Default Set Number	Set Number	Degree	Low Range	High Range

COEFFICIENTS			
C6	C7	C8	C9

TABLE A–8 INSTRUCTIONS FOR COMPLETING STATE CODES SCREEN A–8
(Page 1 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
PCN	Character	7	Displays PCN (Parameter Correlation Number) identifier on A–3.	Auto populated from A–3 with a unique identifier parameter PCN.	PD
Name	Character	89	Displays unique name to identify the PCN parameter that was entered on A–3.	Auto populated from A–3 with a unique identifier parameter name.	PD
Device	Character	8	Displays Primitive PUI Device values (Element, Functional System, Group Assembly, Generic Device Code) that were entered in table A–1	Auto populated from A–1.	DSM
Seq Num	Character	4	Displays Primitive PUI Sequence Numbers that were entered on A–3. (PUI).	Auto populated from A–3.	DSM
Signal Type	Character	1	Displays Primitive PUI Signal Type value that was entered on A–3.	Auto populated from A–3.	DSM
Data Type	Character	5	Displays the Data Type from A–4.	Auto populated from A–4.	PD
Engineering Units	Character	10	Displays the engineering units of the calibration set from A–4.	Auto populated from A–4.	PD
Cal SW PCN	Character	7	Enter the unique Calibration Switching PCN parameter.	None	PD
Cal Switch Primitive PUI	Character	13	Displays the Primitive PUI Device values associated with its Calibration Switching PCN. If blank, no calibration switching is performed.	Auto populated if the Primitive PUI exist for the specific PCN.	PD
Low Range	Number	31,15	Enter the low end of the range in engineering units for the calibration switch measurement. Reference MSFC–DOC–1949C, Vol. 4, Section 2.18, State Code Table.	None	PD
High Range	Number	31,15	Enter the high end of the range in engineering units for the calibration switch measurement. Reference MSFC–DOC–1949C, Vol. 4, Section 2.18, State Code Table.	None	PD
State Code	Character	12	Enter the state conversion code of the calibration switch measurement when the data is within the state code conversion measurement.	None	PD
Def. Set Number	Number	2	Enter the set number of the default calibration set. If calibration switching was not selected, then the default set number can only be 1.	Min=1 Max=32	PD

TABLE A–8 INSTRUCTIONS FOR COMPLETING STATE CODES SCREEN A–8
(Page 2 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Set Num	Number	2	Enter the unique number for each set of point pairs. If calibration switching was not selected, then the default set number can only be 1.	Min=1 Max=32	PD
Sequence Number	Number	2	Enter the sequence number of the state code within the calibration set number.	Min=1 Max=99	PD
Low Count	Number	12	Enter the low end of the range of counts for which the state conversion code applies.	Min= –2147483648 Max= 2147483648	PD
High Count	Number	12	Enter the high end of the range of counts for which the state conversion code applies	Min= –2147483648 Max= 2147483648	PD
State Code	Character	25	Enter state conversion code for a parameter when its count falls into the range specified by the low and high.	None	PD
Expected State	Character	1	Check this box if this parameter will have expected state data.	None	PD

SCREEN A–8 STATE CODES
(Screen 1 of 1)

PARAMETERS						
PCN	Name	Primitive PUI			Data Type	Eng Units
		Device	Seq Num	Signal Type		

CALIBRATION SWITCHING			
Cal Switch PCN			
Cal Switch Primitive PUI			
Low Range			
High Range			
State Code			

STATE CODES						
Default Set Number	Set Number	Sequence Number	Low Count	High Count	State Code	Expected State

TABLE A–9 INSTRUCTIONS FOR COMPLETING EXPECTED STATES SCREEN A–9
(Page 1 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
PCN	Character	7	Displays PCN (Parameter Correlation Number) identifier on A–3.	Auto populated from A–3 with a unique identifier parameter PCN.	PD
Name	Character	89	Displays unique name to identify the PCN parameter that was entered on A–3.	Auto populated from A–3 with a unique identifier parameter name.	PD
Device	Character	8	Displays Primitive PUI Device values (Element, Functional System, Group Assembly, Generic Device Code) that were entered in table A–1	Auto populated from A–1.	PSI
Seq Num	Character	4	Displays Primitive PUI Sequence Numbers that were entered on A–3. (PUI).	Auto populated from A–3.	DSM
Signal Type	Character	1	Displays Primitive PUI Signal Type value that was entered on A–3.	Auto populated from A–3.	DSM
Exception Monitored Message Description	Character	60	Enter the text description of the exception monitor error message.	None	PD
Default Set Number	Number	2	Enter the set number of the default calibration set. If expected state switching was not selected, then the default set number can only be 1.	Min=1 Max=32	PD
Set Number	Number	2	Enter the unique number for each set of point pairs. If expected state switching was not selected, then the default set number can only be 1.	Min=1 Max=32	PD
Expected States	Character	12	Enter expected state of the measurement being monitored.	None	PD
Samples Used	Character	1	Chose either all samples or only first sample to be used for expected state.	All = N First = F None = N	PD
Number of Violations	Number	2	Enter the number of consecutive state code violations to be tolerated before user notification.	Min=1 Max=99	PD
ES Switch PCN	Character	7	Enter the unique ES Switching PCN parameter.	None	PD

TABLE A–9 INSTRUCTIONS FOR COMPLETING EXPECTED STATES SCREEN A–9
(Page 2 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
ES Switch Primitive PUI	Character	13	Displays the Primitive PUI Device values associated with its ES Switching PCN. If blank, no calibration switching is performed.	Auto populated if the Primitive PUI exist for the specific PCN.	PD
Low Range	Number	31,15	Enter the low end of the range in engineering units for the ES switch measurement. Reference MSFC–DOC–1949C, Vol. 4, Section 2.22, Expected State Table.	None	PD
High Range	Number	31,15	Enter the high end of the range in engineering units for the ES switch measurement. Reference MSFC–DOC–1949C, Vol. 4, Section 2.22, Expected State Table.	None	PD
State Code	Character	25	Enter the state conversion code of the ES switch measurement when the data is within the state code conversion measurement.	None	PD

SCREEN A–9 EXPECTED STATES
(Screen 1 of 1)

PARAMETERS					
PCN	Name	Primitive PUI			Exception Monitored Message Description
		Device	Seq Num	Signal Type	

EXPECTED STATES				
Default Set Number	Set Number	Expected State	Samples Used	Number of Violations

EXPECTED STATE SWITCHING			
ES Switch PCN			
ES Switch Primitive PUI			
Low Range			
High Range			
State Code			

TABLE A–10 INSTRUCTIONS FOR COMPLETING LIMIT SENSING SCREEN A–10
(Page 1 of 3)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
PCN	Character	7	Displays PCN (Parameter Correlation Number) identifier on A–3.	Auto populated from A–3 with a unique identifier parameter PCN.	PD
Name	Character	89	Displays unique name to identify the PCN parameter that was entered on A–3.	Auto populated from A–3 with a unique identifier parameter name.	PD
Device	Character	8	Displays Primitive PUI Device values (Element, Functional System, Group Assembly, Generic Device Code) that were entered in table A–1	Auto populated from A–1.	DSM
Seq Num	Character	4	Displays Primitive PUI Sequence Numbers that were entered on A–3. (PUI).	Auto populated from A–3.	DSM
Signal Type	Character	1	Displays Primitive PUI Signal Type value that was entered on A–3.	Auto populated from A–3.	DSM
Exception Monitored Message Description	Character	60	Enter the text description of the exception monitor error message.	None	PD
Default Set Number	Number	2	Enter the set number of the default calibration set. If limit switching was not selected, then the default set number can only be 1.	Min=1 Max=32	PD
Set Number	Number	2	Enter the unique number for each set of point pairs. If limit switching was not selected, then the default set number can only be 1.	Min=1 Max=32	PD
Low Warning	Number	31,15	Enter the minimum value in engineering units at which a warning should be displayed. Reference MSFC–DOC–1949C, Vol. 4, Section 2.20, Limit Table.	The Low Warning value must be lower than the Low Caution, High Caution, and High Warning values.	PD
Low Caution	Number	31,15	Enter the minimum value in engineering units at which a caution should be displayed. Reference MSFC–DOC–1949C, Vol. 4, Section 2.20, Limit Table.	The Low Caution value must be lower than High Caution and High Warning values.	PD

TABLE A–10 INSTRUCTIONS FOR COMPLETING LIMIT SENSING SCREEN A–10
(Page 2 of 3)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
High Caution	Number	31,15	Enter the maximum value in engineering units at which a caution should be displayed. Reference MSFC–DOC–1949C, Vol. 4, Section 2.20, Limit Table.	The High Caution value must be lower than High Warning values.	PD
High Warning	Number	31,15	Enter the maximum value in engineering units at which a warning should be displayed. Reference MSFC–DOC–1949C, Vol. 4, Section 2.20, Limit Table.	None	PD
Delta	Number	31,15	Enter the allowable change between two consecutive samples of the measurement. Reference MSFC–DOC–1949C, Vol. 4, Section 2.20, Limit Table.	None	PD
Samples Used	Character	1	Chose either all samples or only first sample to be used for expected state.	All = N First = F None = N	PD
Number of Violations	Number	2	Enter the number of consecutive state code violations to be tolerated before user notification.	Min=1 Max=99	PD
Limited Switch PCN	Character	7	Enter the unique limit Switching PCN parameter.	None	PD
Limit Switch Primitive PUI	Character	13	Displays the Primitive PUI Device values associated with its limit Switching PCN. If blank, no calibration switching is performed.	Auto populated if the Primitive PUI exist for the specific PCN.	PD
Low Range	Number	31,15	Enter the low end of the range in engineering units for the limit switch measurement. Reference MSFC–DOC–1949C, Vol. 4, Section 2.20, Limit Table.	None	PD

TABLE A–10 INSTRUCTIONS FOR COMPLETING LIMIT SENSING SCREEN A–10
(Page 3 of 3)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
High Range	Number	31,15	Enter the high end of the range in engineering units for the limit switch measurement. Reference MSFC–DOC–1949C, Vol. 4, Section 2.20, Limit Table.	None	PD
State Code	Character	12	Enter the state conversion code of the ES switch measurement when the data is within the state code conversion measurement.	None	PD

SCREEN A–10 LIMIT SENSING
(Screen 1 of 1)

PCN	NAME	PRIMITIVE PUI			EXCEPTION MONITORED MESSAGE DESCRIPTION
		DEVICE	SEQ NUM	SIGNAL TYPE	

LIMIT SENSING								
DEFAULT SET NUMBER	SET NUMBER	LOW WARNING	LOW CAUTION	HIGH CAUTION	HIGH WARNING	DELTA	SAMPLES USED	NUMBER OF VIOLATIONS

LIMIT SENSING			
LIMIT SWITCH PCN			
LIMIT SWITCH PRIMITIVE PUI			
LOW RANGE			
HIGH RANGE			
STATE CODE			

TABLE A–11 INSTRUCTIONS FOR COMPLETING ONBOARD PROC SCREEN A–11
(Page 1 of 1)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
PCN	Character	7	Displays PCN (Parameter Correlation Number) identifier on A–3.	Auto populated from A–3 with a unique identifier parameter PCN.	PD
Name	Character	89	Displays unique name to identify the PCN parameter that was entered on A–3.	Auto populated from A–3 with a unique identifier parameter name.	PD
Device	Character	8	Displays Primitive PUI Device values (Element, Functional System, Group Assembly, Generic Device Code) that were entered in table A–1	Auto populated from A–1.	DSM
Seq Num	Character	4	Displays Primitive PUI Sequence Numbers that were entered on A–3. (PUI).	Auto populated from A–3.	DSM
Signal Type	Character	1	Displays Primitive PUI Signal Type value that was entered on A–3.	Auto populated from A–3.	DSM
PLMDM Limit Check	Character	1	Check this box if this parameter requires PLMDM limit check service.	None	PD
Timeliner Service	Character	1	Check this box if this telemetry parameter will be referenced inside a timeline automated procedure file, otherwise leave blank.	Auto populated based on the Health and Status flag on Screen A–3.	PD
PCS Check Service	Character	1	Check this box if this if this parameter will require PCS limit check service.	None	PD
Onboard Data Type	Character	4	Select the Onboard Data Type that defines how data is represented and how data is to be processed.	See D684–10056–01 Appendix J for description.	PD
Ancillary Data	Character	1	Check this box if this if this parameter can be used as an ancillary data parameter that can be used by other payloads.	See D684–11300–01	PD
Word PUI	Character	13	Enter the start word number within each data packet for this parameter. Words are 16 bits in length. The first word (payload subset ID) number is one with subsequent word numbers in sequential order. Do not repeat for additional parameters contained in the same word.	1–1272 words First word number=1 Packets can be up to 1280 words in length for each RT address, which includes CCSDS header and subset ID words.	PD

SCREEN A–11 ONBOARD PROC
(Screen 1 of 1)

ON–BOARD PARAMETERS										
PCN	NAME	PRIMITIVE PUI			SERVICE			ONBOARD DATA TYPE	ANCILLARY DATA	WORD PUI
		DEVICE	SEQ NUM	SIGNAL TYPE	PLMDM LIMIT CHECK	TIMELINER SERVICE	PCS LIMIT CHECK SERVICE			

TABLE A–12 INSTRUCTIONS FOR COMPLETING PLMDM SCREEN A–12
(Page 1 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
PCN	Character	7	Displays PCN (Parameter Correlation Number) identifier on A–3.	Auto populated from A–3 with a unique identifier parameter PCN.	PD
Device	Character	8	Displays Primitive PUI Device values (Element, Functional System, Group Assembly, Generic Device Code) that were entered in table A–1	Auto populated from A–1.	DSM
Seq Num	Character	4	Displays Primitive PUI Sequence Numbers that were entered on A–3. (PUI).	Auto populated from A–3.	DSM
Signal Type	Character	1	Displays Primitive PUI Signal Type value that was entered on A–3.	Auto populated from A–3.	DSM
Name	Character	89	Name from A–3.	Auto populated from unique identifier parameter name.	PD
Onboard Data Type	Character	4	Display the Onboard Data Type that defines how data is represented and how data is to be processed.	Auto populated from A–11.	PD
Method (error)	Character	1	Enter the type of error checking to be performed by the MDM.	E= equal to N= not equal to U= upper limit L= lower limit	PD
Annunciation (Error Type)	Character	1	Enter the type of error message.	C= caution W=warning N= none	PD
Value	Number	27, 13	Enter the value to check the PUI against. Actual value is dependent on the data type.	None	PD
Trip Count	Number	2	Number of sequential times a PUI can go out of limits prior to the PLMDM providing an out of limits.	00–60	PD
Command CN (for the Cmd to be sent)	Number	7	Enter the Command Correlation Number to be sent as a result of PLMDM limit check service.	None	PD
Device	Character	8	Displays the Command PUI Device values associated with its Command CN.	Auto populated with the Cmd PUI.	PD

TABLE A–12 INSTRUCTIONS FOR COMPLETING PLMDM SCREEN A–12
(Page 2 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Seq Num	Character	4	Displays the Command PUI Seq Num values associated with its Command CN.	Auto populated with the Cmd Primitive PUI.	PD
Signal Type	Character	1	Displays the Command PUI Signal Type value associated with its Command CN.	Auto populated with the Cmd Primitive PUI.	PD

SCREEN A–12 PLMDM
(Screen 1 of 1)

ON–BOARD PARAMETERS					
PCN	**PRIMITIVE LIMITS**			**NAME**	**ONBOARD DATA TYPE**
	Device	Seq Num	Signal Type		

PLMDM LIMITS							
Method Error	Annunciation (Error Type)	Value	Trip Count	Command CN (for the Cmd to be sent)	Command PUI		
					Device	Seq Num	Signal Type

TABLE A–13 INSTRUCTIONS FOR COMPLETING PCS SCREEN A–13
(Page 1 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
PCN	Character	7	Displays PCN (Parameter Correlation Number) identifier on A–3.	Auto populated from A–3 with a unique identifier parameter PCN.	PD
Name	Character	89	Displays unique name to identify the PCN parameter that was entered on A–3.	Auto populated from A–3 with a unique identifier parameter name.	PD
Device	Character	8	Displays Primitive PUI Device values (Element, Functional System, Group Assembly, Generic Device Code) that were entered in table A–1	Auto populated from A–1.	DSM
Seq Num	Character	4	Displays Primitive PUI Sequence Numbers that were entered on A–3. (PUI).	Auto populated from A–3.	DSM
Signal Type	Character	1	Displays Primitive PUI Signal Type value that was entered on A–3.	Auto populated from A–3.	DSM
Onboard Data Type	Character	4	Display the Onboard Data Type that defines how data is represented and how data is to be processed.	Auto populated from A–11.	PD
Onboard Cal Type	Character	2	Select Polynomial or Linear for the PCS Onboard Calibration Type.	Blank = No calibration Polynomial Linear	PD
PCS Engineering Units	Character	10	Enter the engineering units defining this parameter.	None	PD
Number of Limit sets (max 3)	Number	1	Enter the number of limit sets that are required.	1–3	PD
Lower Limit Set 1	Number	14	Enter the lower limit in engineering units for set 1.	None	PD
Upper Limit Set 1	Number	14	Enter the upper limit in engineering units for set 1.	None	PD
Lower Limit Set 2	Number	14	Enter the lower limit in engineering units for set 2.	None	PD
Upper Limit Set 2	Number	14	Enter the upper limit in engineering units for set 2.	None	PD

TABLE A–13 INSTRUCTIONS FOR COMPLETING PCS SCREEN A–13
(Page 2 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Lower Limit Set 3	Number	14	Enter the lower limit in engineering units for set 3.	None	PD
Upper Limit Set 3	Number	14	Enter the upper limit in engineering units for set 3.	None	PD

SCREEN A–13 PCS
(Screen 1 of 1)

ON–BOARD PARAMETERS							
PCN	Name	Primitive PUI			Onboard Data Type	Onboard Cal Type	PCS Engineering Units
		DEVICE	**SEQ NUM**	**SIGNAL TYPE**			

PCS LIMITS						
NUMBER OF LIMIT SETS (MAX 3)	**LOWER LIMIT SET 1**	**UPPER LIMIT SET 1**	**LOWER LIMIT SET 2**	**UPPER LIMIT SET 2**	**LOWER LIMIT SET 3**	**UPPER LIMIT SET 3**

TABLE A–14 INSTRUCTIONS FOR COMPLETING POLYNOMIALS SCREEN A–14
(Page 1 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
PCN	Character	7	Displays PCN (Parameter Correlation Number) identifier on A–3 requiring PCS Polynomial calibration.	Auto populated from A–3 with a unique identifier parameter PCN.	PD
Name	Character	89	Displays unique name to identify the PCN parameter that was entered on A–3 requiring PCS Polynomial calibration.	Auto populated from A–3 with a unique identifier parameter name.	PD
Device	Character	8	Displays Primitive PUI Device values (Element, Functional System, Group Assembly, Generic Device Code) that were entered in table A–1	Auto populated from A–1.	DSM
Seq Num	Character	4	Displays Primitive PUI Sequence Numbers that were entered on A–3. (PUI).	Auto populated from A–3.	DSM
Signal Type	Character	1	Displays Primitive PUI Signal Type value that was entered on A–3.	Auto populated from A–3.	DSM
Onboard Data Type	Character	4	Display the Onboard Data Type from A–11.	Auto populated from A–11. See D684–10056–01 Appendix J for description.	PD
PCS Eng Units	Character	10	Display the engineering units defined for this parameter from A–13.	Auto populated from A–13.	PD
Min Value (Eng. Units)	Number	27,13	Enter the minimum value supported by this calibration set.	Valid values defined in D684–10056–01 Rev. K Field No.=3.2–4 (M) and Field Name= Polynomial Minimum Calibration Range.	PD
Max Value (Eng. Units)	Number	27,13	Enter the maximum value supported by this calibration set.	Valid values defined in D684–10056–01 Rev. K Field No.=3.2–5 and Field Name= Polynomial Maximum Calibration Range.	PD
Degree	Number	1	Enter the curve degree of coefficients to be used.	Valid values 1–5. Defined in D684–10056–01 Rev. K, Appendix N, Field No.=3.2–3 (M) and Field Name= Curve Degree.	PD

TABLE A–14 INSTRUCTIONS FOR COMPLETING POLYNOMIALS SCREEN A–14
(Page 2 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Coefficient 0	Character	14	Enter the zero–level coefficient of the polynomial or step; including the sign.	Valid values defined in D684–10056–01 Rev. K Field No.=3.2–7 (M) and Field Name= A0 Coefficient.	PD
Coefficient 1	Character	14	Enter the first–level coefficient of the polynomial or step; including the sign.	Valid values defined in D684–10056–01 Rev. K Field No.=3.2–8 (M) and Field Name= A1 Coefficient.	PD
Coefficient 2	Character	14	Enter the second–level coefficient of the polynomial or step; including the sign.	Valid values defined in D684–10056–01 Rev. K Field No.=3.2–8 (M) and Field Name= A2 Coefficient.	PD
Coefficient 3	Character	14	Enter the third–level coefficient of the polynomial or step; including the sign.	Valid values defined in D684–10056–01 Rev. K Field No.=3.2–8 (M) and Field Name= A3 Coefficient.	PD
Coefficient 4	Character	14	Enter the fourth–level coefficient of the polynomial or step; including the sign.	Valid values defined in D684–10056–01 Rev. K Field No.=3.2–8 (M) and Field Name= A4 Coefficient.	PD

SCREEN A–14 POLYNOMIALS
(Screen 1 of 1)

ONBOARD PARAMETERS		PRIMITIVE PUI				ON-BOARD DATA TYPE	PCS (ENG UNITS)	POLYNOMIAL							
PCN	NAME	DEVICE	SEQ NUM	SIGNAL TYPE				MIN VALUE (ENG UNITS)	MAX VALUE (ENG UNITS)	DEGREE	COEFFICIENT 0	COEFFICIENT 1	COEFFICIENT 2	COEFFICIENT 3	COEFFICIENT 4

TABLE A–15 INSTRUCTIONS FOR COMPLETING LINEAR SCREEN A–15
(Page 1 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
PCN	Character	7	Displays PCN (Parameter Correlation Number) identifier on A–3.	Auto populated from A–3 with a unique identifier parameter PCN.	PD
Name	Character	89	Displays unique name to identify the PCN parameter that was entered on A–3.	Auto populated from A–3 with a unique identifier parameter name.	PD
Device	Character	8	Displays Primitive PUI Device values (Element, Functional System, Group Assembly, Generic Device Code) that were entered in table A–1	Auto populated from A–1.	DSM
Seq Num	Character	4	Displays Primitive PUI Sequence Numbers that were entered on A–3. (PUI).	Auto populated from A–3.	DSM
Signal Type	Character	1	Displays Primitive PUI Signal Type value that was entered on A–3.	Auto populated from A–3.	DSM
Onboard Data Type	Character	4	Display the Onboard Data Type from A–11.	Auto populated from A–11. See D684–10056–01 Appendix J for description.	PD
PCS Engineering Units	Character	10	Display the engineering units defined for this parameter from A–13.	Auto populated from A–13.	PD
Min Value (Eng. Units)	Number	27,13	Enter the minimum value supported by this calibration set.	Valid values defined in D684–10056–01 Rev. K Field No.=3.3–4 (M) and Field Name= Piecewise Linear Minimum Calibration Range.	PD
Max Value (Eng. Units)	Number	27,13	Enter the maximum value supported by this calibration set.	Valid values defined in D684–10056–01 Rev. K Field No.=3.3–5 and Field Name= Piecewise Linear Maximum Calibration Range.	PD
Number of segments (max 30)	Number	2	Enter the number of segments for this calibration set.	Valid values 1–30. Defined in D684–10056–01 Rev. K Field No.=3.3–3 (M) and Field Name= Number of Piecewise Segments.	PD

TABLE A–15 INSTRUCTIONS FOR COMPLETING LINEAR SCREEN A–15
(Page 2 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Segment Number	Number	2	Enter the segment number for this calibration set.	Valid values 1–30. Defined in D684–10056–01 Rev. K Field No.=3.3–7 (M) and Field Name= Piecewise Segment Number.	PD
Segment A0	Number	27,13	Enter the A0 coefficient for this segment.	Valid values defined in D684–10056–01 Rev. K Field No.=3.3–10 and Field Name= Segment A0 Coefficient.	PD
Segment A1	Number	27,13	Enter the A1 coefficient for this segment.	Valid values defined in D684–10056–01 Rev. K Field No.=3.3–11 and Field Name= Segment A1 Coefficient.	PD
Segment Low	Number	27,13	Enter the segment low end point value. See SSP D684–10056–01 Rev. K section 3.3.4.2.2 for more detail information.	Valid values defined in D684–10056–01 Rev. K Field No.=3.3–8 and Field Name= Segment Low End Point.	PD
Segment High	Number	27,13	Enter the segment low end point value. See SSP D684–10056–01 Rev. K section 3.3.4.2.2 for more detail information	Valid values defined in D684–10056–01 Rev. K Field No.=3.3–9 and Field Name= Segment High End Point.	PD

SCREEN A–15 LINEAR
(Screen 1 of 1)

ON–BOARD PARAMETERS									
PCN	Name	Primitive PUI			Onboard Data Type	PCS Engineering Units	Min Value (in Eng. Units)	Max Value (in Eng. Units)	Number of Segments (max 30)
		Device	Seq Num	Signal Type					

LINEAR				
Segment Number	**Segment A0**	**Segment A1**	**Segment Low**	**Segment High**

TABLE A–16 INSTRUCTIONS FOR COMPLETING LRDL SCREEN A–16
(Page 1 of 1)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Pkt CN	Number	4	Enter the packet identifier. The packet correlation number is a unique payload–defined number that is used to relate packet definitions from one table to another. This number provides information about packet “n”; the same packet correlation number shall be automatically entered on any tabled related to packet “n.” If this field is used, then the Low Rate Telemetry (LRT) field in the Software Interface Summary Table will contain an “X.”	Health and Status default value = 9999	PD
Name	Character	20	Enter a descriptive name for the data packet.	None	PD
APID	Number	4	Enter the Application Process Identifier number assigned by ISS (obtained from Mission Build Facility (MBF) APID table.	0–2047	DSM
Time ID	Number	2	Always a binary “01” for data packets.	Default=01	PD
Pkt Type	Number	4	Enter the binary number corresponding to data packet type. Packet type currently can only be “0.”	Default=0	PD
Version ID	Number	5	Used to identify multiple versions of a format (word 7, secondary header.)	1–65535 Default=1	PD
Length (words)	Number	4	Enter the total number of words including CCSDS header contained in the data packet. Header contained in the data packet. (Length for LRDL telemetry can be up to 640 words, including 8 words for the CCSDS header.)	LRT 50–640 words PL H&S 13 – 1280 words PSCP PL 50 – 2048 words	PD
Packet Rate/ Update Cycle	Number	8,5	Enter the data rate of each of the data packets.	None	PD
Units	Character	11	Select Packets/sec or Kbps	Packets/sec is the preferred measurement unit	PD
Update Rate (Hz)	Number	2,1	Enter the update rate of each of the data packets.	0.1HZ or 1.0Hz	PD
Packet Proc? POIC	Character	1	Check this box if the packet is to be processed by the POIC.	None	PD

SCREEN A–16 LRDL
(Screen 1 of 1)

LRDL PACKETS										
Pkt CN	Name	APID	Time ID	Pkt Type	Version ID	Length (Words)	Packet Rate/ Update Cycle	Units	Update Rate (HZ)	Packet Proc? POIC

TABLE A–17 INSTRUCTIONS FOR COMPLETING MRDL SCREEN A–17
(Page 1 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Pkt CN	Number	4	Enter the packet identifier. The packet correlation number is a unique payload–defined number that is used to relate packet definitions from one table to another. This number provides information about packet “n”; the same packet correlation number shall be automatically entered on any tabled related to packet “n.” If this field is used, then the Medium Rate Telemetry (MRT) field in the Software Interface Summary Table will contain and “X.”	none	PD
Name	Character	20	Enter a descriptive name for the data packet.	None	PD
APID	Number	4	Enter the Application Process Identifier number assigned by ISS (obtained from Mission Build Facility (MBF) APID table.	0–2047	DSM
Time ID	Number	2	Always a binary “01” for data packets.	Default=01	PD
Pkt Type	Number	4	Enter the binary number corresponding to data packet type. Packet type currently can only be “0.”	Default=0	PD
Version ID	Number	5	Used to identify multiple versions of a format (word 7, secondary header.)	1–65535 Default=1	PD
Min.	Number	4	Enter the minimum number of words including CCSDS header contained in the data packet. Header contained in the data packet. (Length for MRDL telemetry can be up to 750 words, including 8 words for the CCSDS header.)	Length/ Words Range = 50–750	PD
Nom.	Number	4	Enter the nominal number of words including CCSDS header contained in the data packet. Header contained in the data packet. (Length for MRDL telemetry can be up to 750 words, including 8 words for the CCSDS header.)	Length/ Words Range = 50–750	PD
Max.	Number	4	Enter the maximum number of words including CCSDS header contained in the data packet. Header contained in the data packet. (Length for MRDL telemetry can be up to 750 words, including 8 words for the CCSDS header.)	Length/ Words Range = 50–750	PD

TABLE A–17 INSTRUCTIONS FOR COMPLETING MRDL SCREEN A–17
(Page 2 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Min.	Number	8,5	Enter the minimum data rate of each of the data packets.	Packet rate/update cycle	PD
Nom.	Number	8,5	Enter the nominal data rate of each of the data packets.	Packet rate/update cycle	PD
Max.	Number	8,5	Enter the maximum data rate of each of the data packets.	Packet rate/update cycle	PD
Units	Character	11	Select Packets/sec or Kbps	Packets/sec is the preferred measurement unit	PD
Update rate (Hz)	Number	3	Enter the update rate of each of the data packets.	0.1HZ or 1.0Hz	PD
Separation	Number	8,4	Enter the amount of time in milliseconds separating the telemetry downlink packets.	0.0096–1000	PD
Parsing Method	Character	11	Select “Burst” or “Spaced” as the packet parsing method used to generate MRDL traffic.	“Burst” or “Spaced”	PD
Packet Proc? POIC	Character	1	Check this box if the packet is to be processed by the POIC.	None	PD

SCREEN A–17 MRDL
(Screen 1 of 1)

MRDL PACKETS																
Pkt CN	Name	API D	Time ID	Pkt Type	Version ID	Length			Packet Rate/ Update Cycle			Units	UpDate Rate (Hz)	Separation	Parsing Method	Packet Proc?
						Min	Nom	Max	Min	Nom	Max					POIC

TABLE A–18 INSTRUCTIONS FOR COMPLETING HRDL SCREEN A–18
(Page 1 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Pkt CN	Number	4	Enter the packet identifier. The packet correlation number is a unique payload–defined number that is used to relate packet definitions from one table to another. This number provides information about packet “n”; the same packet correlation number shall be automatically entered on any tabled related to packet “n.” If this field is used, then the High Rate Telemetry (HRT) field in the Software Interface Summary Table will contain and “X.”	none	PD
Name	Character	20	Enter a descriptive name for the data packet.	None	PD
APID	Number	4	Enter the Application Process Identifier number assigned by ISS (obtained from Mission Build Facility (MBF) APID table.	0–2047	DSM
Time ID	Number	2	Always a binary “01” for data packets.	Default=01	PD
Pkt Type	Number	4	Enter the binary number corresponding to data packet type. Packet type currently can only be “0.”	Default=0	PD
Version ID	Number	5	Used to identify multiple versions of a format (word 7, secondary header.)	1–65535 Default=1	PD
Length (words)	Number	4	Enter the total number of words including CCSDS header contained in the data packet. Header contained in the data packet. (Length for HRDL telemetry can be up to 640 words, including 8 words for the CCSDS header.)	50 – 2048 words including CCSDS header (Min –100 Max – 4096 bytes)	PD
Packet Rate/ Update Cycle	Number	8,4	Enter the data rate of each of the data packets.	None	PD
Units	Character	11	Select Packets/sec or Kbps	Packets/sec is the preferred measurement unit	PD
Update Rate (Hz)	Number	3	Enter the update rate of each of the data packets.	0.1HZ or 1.0Hz	PD
Separation	Number	8,4	Enter the number of sync symbols separating the telemetry downlink packets.	25 – 99999	PD

TABLE A–18 INSTRUCTIONS FOR COMPLETING HRDL SCREEN A–18
(Page 2 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Parsing Meth-od	Character	11	Select “Burst”, “Microburst” or “Distributed” as the packet parsing method used to generate HRDL traffic.	“Burst” or “Microburst”, or “Distributed”	PD
Protocol	Character	1	Select CCSDS (“L”) or Bitstream (“S”) as the HRDL downlink protocol.	L= CCSDS S=Bitstream	PD
Packet Proc? POIC	Character	1	Check this box if the packet is to be processed by the POIC.	None	PD

SCREEN A–18 HRDL
(Screen 1 of 1)

HRDL PACKETS																
Pkt CN	Name	API D	Time ID	Pkt Type	Version ID	Length			Packet Rate/ Update Cycle			Units	UpDate Rate (Hz)	Separation	Parsing Method	Packet Proc?
						Min	Nom	Max	Min	Nom	Max					POIC

TABLE A–19 INSTRUCTIONS FOR COMPLETING POIC SCREEN A–19
(Page 1 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Pkt CN	Number	4	Displays the packet identifier or packet correlation number from screen A–16, A17, or A–18.	Auto populated from A–16, A–17, or A–18	PD
Name	Character	20	Displays the description of the data packet from screen A–16, A17, or A–18.	Auto populated from A–16, A–17, or A–18.	PD
APID	Number	4	Displays the Application Process Identifier number assigned by ISS (obtained from Mission Build Facility (MBF) APID table.	Auto populated from A–16, A–17, or A–18. Range: 0–2047	DSM
Time Tag PCN	Character	7	Enter the parameter correlation number of the embedded time tag with–in the packet.	None	PD
Device	Character	8	Displays the Primitive PUI Device values associated with its Packet PCN.	Auto populated from A–1. If the Primitive PUI exist.	DSM
Seq Num	Character	4	Displays Primitive PUI Sequence Numbers associated with its Packet PCN.	Auto populated from A–3. If the Primitive PUI exist.	DSM
Signal Type	Character	1	Displays Primitive PUI Signal Type value associated with its Packet PCN.	Auto populated from A–3. If the Primitive PUI exist.	DSM
Format Code PCN	Character	7	Enter the parameter correlation number, which identifies the measurement indicating the format code.	None	PD
Device	Character	8	Displays the Primitive PUI Device values associated with its Packet PCN.	Auto populated from A–1. If the Primitive PUI exist.	PD
Seq Num	Character	4	Displays Primitive PUI Sequence Numbers associated with its Packet PCN.	Auto populated from A–3. If the Primitive PUI exist.	PD
Signal Type	Character	1	Displays Primitive PUI Signal Type value associated with its Packet PCN.	Auto populated from A–3. If the Primitive PUI exist.	PD
Protocol	Character	1	Displays CCSDS (“L”) or Bitstream (“S”) as the HRDL downlink protocol or blank for MRDL and LRDL.	Auto populated from HRDL A–18, blank if MRDL or LRDL packet queried.	PD
Pkt Proprietary	Character	1	Check this box if this parameter requires sensitive (medical related data.)	None	PD
Format Code (HEX)	Character	4	Enter the value of the packet Format Code ID in HEX that corresponds to the packet ID or the APID.	0000–FFFF (Hexadecimal)	PD

TABLE A–19 INSTRUCTIONS FOR COMPLETING POIC SCREEN A–19
(Page 2 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Length (Words)	Number	4	Enter the length of the packet in words.	All positive integer numbers.	PD
Update Cycle	Number	8,5	Enter the number of packets per second to be received.	All positive real numbers.	PD
Data Cycle	Number	3	Enter the number of packets required to include at least one sample for every measurement in a packet Format.	All positive integer numbers.	PD
Subset Flag	Character	1	Check this box if subsets are contained within the packet.	None	PD

SCREEN A–19 POIC
(Screen 1 of 1)

PACKETS												
Pkt CN	Name	APID	Time Tag PCN	Time Tag Primitive PUI			Format Code PCN	Format Code Primitive PUI			Protocol	PKT Proprietary
				Device	Seq Num	Signal Type		Device	Seq Num	Signal Type		

PACKET FORMATS				
Format Code (HEX)	Length (Words)	Update Cycle	Data Cycle	Subset Flag?

TABLE A–20 INSTRUCTIONS FOR COMPLETING CONTENT DEF SCREEN A–20 [1 OF 3]
(Page 1 of 4)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Pkt CN	Number	4	Displays the packet identifier or packet correlation number from screen A–16, A17, or A–18.	Auto populated from A–16, A–17, or A–18	PD
Name	Character	20	Displays the description of the data packet from screen A–16, A17, or A–18.	Auto populated from A–16, A–17, or A–18.	PD
APID	Number	4	Displays the Application Process Identifier number assigned by ISS (obtained from Mission Build Facility (MBF) APID table.	Auto populated from A–16, A–17, or A–18. Range: 0–2047	DSM
Format Code PCN	Character	7	Displays the Format Code PCN from A–19.	Auto populated from A–19.	PD
PCN	Character	7	Automatically displays PCN when identifier is entered.	Auto populated.	PD
Name	Character	89	Displays unique name to identify the PCN parameter that was entered on A–3.	Auto populated from A–3 with a unique identifier parameter name.	PD
Device	Character	8	Displays the Primitive PUI Device values associated with its Packet PCN.	Auto populated from A–1. If the Primitive PUI exist.	DSM
Seq Num	Character	4	Displays Primitive PUI Sequence Numbers associated with its Packet PCN.	Auto populated from A–3. If the Primitive PUI exist.	DSM
Signal Type	Character	1	Displays Primitive PUI Signal Type value associated with its Packet PCN.	Auto populated from A–3. If the Primitive PUI exist.	DSM
Data Type	Character	5	Displays the Data Type from A–4 associated with its Packet PCN.	Auto populated from A–4.	PD
Parameters Comp.	Character	2	Select the type parameter composition required to define the data measurement.	T=Bit–contiguous Typical MS=Bit non–contiguous multi–syllable BG=Bit contiguous group parameter NG=Bit non–contiguous group parameter	PD

TABLE A–20 INSTRUCTIONS FOR COMPLETING CONTENT DEF SCREEN A–20 [1 OF 3] (Page 2 of 4)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Sample Comp.	Character	1	Select the type sample composition that identifies how samples are arranged in the data stream.	N=Normal S=Super C=Counter dependent sampling R=Range dependent sampling	PD
Sample Rate	Number	3	Enter the rate of parameter samples in samples per data stream.	1–999	PD
Sample Offset	Number	6	Enter the number of words to the next occurrence of a super sampled parameter.	All positive integers.	PD
Group Sample	Number	3	Enter the number of samples in a group.	All positive integers.	PD
Group Offset	Number	3	Enter the offset in bits for the next occurrence of a sample in a non–contiguous group.	All positive integers.	PD
Syllable Number	Number	2	Enter the number that indicates the order in which the pieces of the multi–syllable parameter are to be assembled.	All positive integers.	PD
Start Word	Number	5	Enter the start word within the packet.	All positive integers. First word number is one (1).	PD
Start Bit	Number	2	Enter the start bit number within the word.	All positive integers.	PD
Data Length	Number	4	Enter the length of the syllable.	All positive integers.	PD
Total Data Length	Number	4	Displays the sum of the length for the multi–syllable measurement.	All positive integers.	PD

TABLE A–20 INSTRUCTIONS FOR COMPLETING CONTENT DEF SCREEN A–20 [2 OF 3] (Page 3 of 4)

RANGE SECTION

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Range PCN	Character	7	Enter the unique Range PCN parameter.	None	PD
Range Primitive PUI	Character	13	Displays the Primitive PUI values associated with its Range Primitive PCN. If blank, no calibration switching is performed.	Auto populated if the Primitive PUI exist for the specific PCN.	PD
Low Range	Number	31,15	Enter the low end of the range in engineering units for the range measurement.	None	PD
High Range	Number	31,15	Enter the high end of the range in engineering units for the range measurement.	None	PD
State Code	Character	12	Enter the state conversion code of the parameter when the data is within the state code conversion measurement.	None	PD

TABLE A–20 INSTRUCTIONS FOR COMPLETING CONTENT DEF SCREEN A–20 [3 of 3] (Page 4 of 4)

COUNTER SECTION

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Counter PCN	Character	7	Enter the unique Counter PCN parameter.	None	PD
Counter Primitive PUI	Character	13	Displays the Counter Primitive PUI values associated with its Counter Primitive PCN. If blank, no calibration switching is performed.	Auto populated if the Primitive PUI exist for the specific PCN.	PD
Start Value	Number	4	Enter the counter start value for the first valid occurrence of the parameter.	All positive integers. Min=0	PD
Offset	Number	4	Enter the counter delta value to add to the Start Value to derive all valid occurrences of a counter dependent parameter.	All positive integers. Min=2	PD

SCREEN A–20 CONTENT DEF
(Screen 1 of 3)

PACKET FORMAT			
Pkt CN	Name	APID	Format Code (HEX)

PARAMETERS											
PCN	Name	Primitive PUI			Data Type	Parameter Comp.	Sample Comp.	Sample Rate	Sample Offset	Group Sample	Group Offset
		device	seq num	signal type							

SAMPLING LOCATION			
Syllable Number	Start Word	Start Bit	Data Length
		Total Data Length =	

SCREEN A–20 CONTENT DEF

RANGE SECTION
(Screen 2 of 3)

PACKET FORMAT			
Pkt CN	Name	APID	Format Code (HEX)

RANGE			
Range PCN			
Range Primitive PUI			
Low Range			
High Range			
State Code			

PARAMETERS											
PCN	Name	Primitive PUI			Data Type	Parameter Comp.	Sample Comp.	Sample Rate	Sample Off-set	Group Sample	Group Offset
		device	seq num	signal type							

SAMPLING LOCATION			
Syllable Number	Start Word	Start Bit	Data Length
		Total Data Length =	

SCREEN A–20 CONTENT DEF

COUNTER SECTION
(Screen 3 of 3)

PACKET FORMAT			
Pkt CN	Name	APID	Format Code (HEX)

COUNTER			
Counter PCN			
Counter Primitive PUI			
Start Value			
Offset			

PARAMETERS											
PCN	Name	Primitive PUI			Data Type	Parameter Comp.	Sample Comp.	Sample Rate	Sample Offset	Group Sample	Group Offset
		device	seq num	signal type							

SAMPLING LOCATIONS			
Syllable Number	Start Word	Start Bit	Data Length
		Total Data Length =	

TABLE A–21 INSTRUCTIONS FOR COMPLETING COUNTER DEF SCREEN A–21
(Page 1 of 1)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Pkt CN	Number	4	Displays the packet identifier or packet correlation number from screen A–16, A17, or A–18.	Auto populated from A–16, A–17, or A–18	PD
Name	Character	20	Enter the description of the data packet.	None	PD
APID	Number	4	Displays the Application Process Identifier number assigned by ISS (obtained from Mission Build Facility (MBF) APID table.	Auto populated from A–16, A–17, or A–18. Range: 0–2047	DSM
Format Code (HEX)	Character	4	Displays the Format Code (HEX) from A–19.	Auto populated from A–19.	PD
PCN	Character	7	Automatically displays PCN when identifier is entered.	Auto populated.	PD
Parameter Name	Character	89	Displays unique name to identify the PCN parameter that was entered on A–3.	Auto populated from A–3 with a unique identifier parameter name.	PD
Device	Character	8	Displays the Primitive PUI Device values associated with its Packet PCN.	Auto populated from A–1. If the Primitive PUI exist.	DSM
Seq Num	Character	4	Displays Primitive PUI Sequence Numbers associated with its Packet PCN.	Auto populated from A–3. If the Primitive PUI exist.	DSM
Signal Type	Character	1	Displays Primitive PUI Signal Type value associated with its Packet PCN.	Auto populated from A–3. If the Primitive PUI exist.	DSM
Initial Value	Number	4	Enter the initial value of the counter when it starts counting.	All integers. Min=–999	PD
End Value	Number	4	Enter the ending value of the counter.	All integersMin=9999	PD
Wrap Around	Character	1	Select “W” wrap around or “N” not a wrap around counter.	W= wrap around N= not a wrap around	PD
Direction	Character	1	Select “+” increment or “–” decrement to indicate counter direction.	“+”=incrementing “–“=decrementing	PD
Delta	Number	2	Enter the counter delta between successive occurrences of a counter in a stream.	All integers.	PD

SCREEN A–21 COUNTER DEF
(Screen 1 of 1)

PACKET FORMATS			
Pkt CN	Name	APID	Format Code (HEX)

COUNTER DEFINITION									
PCN	Parameter Name	Primitive PUI			Initial Value	End Value	Wrap Around	Direction	Delta
		Device	Seq Num	Signal Type					

TABLE A–22 INSTRUCTIONS FOR COMPLETING SUBSET FORMAT SCREEN A–22
(Page 1 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Pkt CN	Number	4	Displays the packet identifier or packet correlation number from screen A–16, A17, or A–18.	Auto populated from A–16, A–17, or A–18	PD
Name	Character	20	Enter the description of the data packet.	None	PD
APID	Number	4	Displays the Application Process Identifier number assigned by ISS (obtained from Mission Build Facility (MBF) APID table.	Auto populated from A–16, A–17, or A–18. Range: 0–2047	DSM
Format Code (HEX)	Number	12	Displays the Format Code (HEX) from A–19.	Auto populated from A–19.	PD
Subset ID	Character	4	Enter the unique subset PCN.	None	PD
Subset PCN	Character	7	Enter the unique subset PCN.	None	PD
Device	Character	8	Displays the Primitive PUI Device values associated with its Packet PCN.	Auto populated from A–1. If the Primitive PUI exist.	DSM
Seq Num	Character	4	Displays Primitive PUI Sequence Numbers associated with its Packet PCN.	Auto populated from A–3. If the Primitive PUI exist.	DSM
Signal Type	Character	1	Displays Primitive PUI Signal Type value associated with its Packet PCN.	Auto populated from A–3. If the Primitive PUI exist.	DSM
Multiple Formats	Character	1	Check this box if the subset contains multiple formats.	None	PD
Format PCN	Character	7	Enter the unique subset PCN.	None	PD
Device	Character	8	Displays the Packet Format Primitive PUI Device values associated with its Packet PCN.	Auto populated from A–1. If the Packet Format Primitive PUI exist.	PD
Seq Num	Character	4	Displays Packet Format Primitive PUI Sequence Numbers associated with its Packet PCN.	Auto populated from A–3. If the Packet Format Primitive PUI exist.	PD
Signal Type	Character	1	Displays Packet Format Primitive PUI Signal Type value associated with its Packet PCN.	Auto populated from A–3. If the Packet Format Primitive PUI exist.	PD

TABLE A–22 INSTRUCTIONS FOR COMPLETING SUBSET FORMAT SCREEN A–22
(Page 2 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Sample Comp	Character	1	Enter the type of subset sample composition.	N= Normal S= Super C= Counter R= Range D= Random	PD
Code (HEX)	Character	4	Enter the value of the packet subset ID in HEX that corresponds to the subset.	0000–FFFF (Hexadecimal)	PD
Length	Number	3	Enter the length of the subset format in words.	All positive integers. 1280, 2048, (header included for APID 876)	PD

SCREEN A–22 SUBSET FORMAT
(Screen 1 of 1)

PACKET FORMATS			
Pkt CN	Name	APID	Format Code (HEX)

SUBSETS										
Subset ID	Subset PCN	PCN Primitive PUI			Multiple Formats	Format PCN	Format Primitive PUI			Sample Comp.
		Device	Seq Num	Signal Type			Device	Seq Num	Signal Type	

SUBSET FORMAT	
Code (HEX)	Length

TABLE A–23 INSTRUCTIONS FOR COMPLETING SUBSET CONTENT DEF SCREEN A–23
(Page 1 of 4)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Pkt CN	Number	4	Displays the packet identifier or packet correlation number from screen A–16, A17, or A–18.	Auto populated from A–16, A–17, or A–18	PD
Name	Character	20	Enter the description of the data packet.	None	PD
APID	Number	4	Displays the Application Process Identifier number assigned by ISS (obtained from Mission Build Facility (MBF) APID table.	Auto populated from A–16, A–17, or A–18. Range: 0–2047	DSM
Format Code (HEX)	Number	12	Displays the Format Code (HEX) from A–19.	Auto populated from A–19.	PD
Subset ID	Character	4	Displays the unique subset PCN from A–22.	Auto populated from A–22.	PD
Code (HEX)	Character	4	Displays the Code (HEX) from A–22.	Auto populated from A–22.	PD
PCN	Character	7	Automatically displays PCN when identifier is entered.	Auto populated.	PD
Parameter Name	Character	89	Displays unique name to identify the PCN parameter that was entered on A–3.	Auto populated from A–3 with a unique identifier parameter name.	PD
Device	Character	8	Displays the Primitive PUI Device values associated with its Packet PCN.	Auto populated from A–1. If the Primitive PUI exist.	DSM
Seq Num	Character	4	Displays Primitive PUI Sequence Numbers associated with its Packet PCN.	Auto populated from A–3. If the Primitive PUI exist.	DSM
Signal Type	Character	1	Displays Primitive PUI Signal Type value associated with its Packet PCN.	Auto populated from A–3. If the Primitive PUI exist.	DSM
Data Type	Character	5	Displays the Data Type from A–4 associated with its Packet PCN.	Auto populated from A–4.	PD
Parameter Comp.	Character	2	Select the type parameter composition required to define the data measurement.	T=Bit–contiguous Typical MS=Bit non–contiguous multi–syllable BG=Bit contiguous group parameter NG=Bit non– contiguous group parameter	PD

TABLE A–23 INSTRUCTIONS FOR COMPLETING SUBSET CONTENT DEF SCREEN A–23
(Page 2 of 4)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Sample Comp.	Character	1	Select the type sample composition that identifies how samples are arranged in the data stream.	N=Normal S=Super C=Counter dependent sampling R=Range dependent sampling	PD
Sample Rate	Number	3	Enter the rate of parameter samples in samples per data stream.	1–999	PD
Sample Offset	Number	6	Enter the number of words to the next occurrence of a super sampled parameter.	All positive integers.	PD
Group Sample	Number	3	Enter the number of samples in a group.	All positive integers.	PD
Group Offset	Number	3	Enter the offset in bits for the next occurrence of a sample in a non–contiguous group.	All positive integers.	PD
Syllable Number	Number	2	Enter the number that indicates the order in which the pieces of the multi–syllable parameter are to be assembled.	All positive integers.	PD
Start Word	Number	5	Enter the start word within the subset.	All positive integers. First word number is one (1).	PD
Start Bit	Number	2	Enter the start bit number within the subset.	All positive integers.	PD
Data Length	Number	4	Enter the length of the subset.	All positive integers.	PD
Total Data Length	Number	4	Displays the sum of the length for the subset measurement.	All positive integers.	PD
Range PCN	Character	7	Enter the unique Range PCN parameter.	None	PD

TABLE A–23 INSTRUCTIONS FOR COMPLETING SUBSET CONTENT DEF SCREEN A–23
(Page 3 of 4)

RANGE SECTION

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Range Primitive PUI	Character	13	Displays the Primitive PUI values associated with its Range Primitive PCN. If blank, no calibration switching is performed.	Auto populated if the Primitive PUI exist for the specific PCN.	PD
Low Range	Number	31,15	Enter the low end of the range in engineering units for the range measurement.	None	PD
High Range	Number	31,15	Enter the high end of the range in engineering units for the range measurement.	None	PD
State Code	Character	25	Enter the state conversion code of the parameter when the data is within the state code conversion measurement.	None	PD

TABLE A–23 INSTRUCTIONS FOR COMPLETING SUBSET CONTENT DEF SCREEN A–23 (Page 4 of 4)

COUNTER SECTION

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Counter PCN	Character	7	Enter the unique Counter PCN parameter.	None	PD
Primitive PUI	Character	13	Displays the Counter Primitive PUI values associated with its Counter Primitive PCN. If blank, no calibration switching is performed.	Auto populated if the Primitive PUI exist for the specific PCN.	PD
Start Value	Number	4	Enter the counter start value for the first valid occurrence of the parameter.	All positive integers. Min=0	PD
Offset	Number	4	Enter the counter delta value to add to the Start Value to derive all valid occurrences of a counter dependent parameter.	All positive integers. Min=2	PD

SCREEN A–23 SUBSET CONTENT DEF
(Screen 1 of 3)

PACKET FORMAT			
Pkt CN	Name	APID	Format Code (HEX)

SUBSET FORMATS	
Subset ID	Code (HEX)

PARAMETERS											
PCN	Name	Primitive PUI			Data Type	Parameter Comp.	Sample Comp.	Sample Rate	Sample Offset	Group Sample	Group Offset
		device	seq num	signal type							

SAMPLING LOCATION			
Syllable Number	Start Word	Start Bit	Data Length
		Total Data Length =	

SCREEN A–23 SUBSET CONTENT DEF

RANGE SECTION
(Screen 2 of 3)

PACKET FORMAT			
Pkt CN	Name	APID	Format Code (HEX)

RANGE			
Range PCN			
Range Primitive PUI			
Low Range			
High Range			
State Code			

SUBSET FORMATS	
Subset ID	Code (HEX)

PARAMETERS											
PCN	Name	Primitive PUI			Data Type	Parameter Comp.	Sample Comp.	Sample Rate	Sample Off-set	Group Sample	Group Offset
		device	seq num	signal type							

SAMPLING LOCATION			
Syllable Number	Start Word	Start Bit	Data Length
		Total Data Length =	

SCREEN A–23 SUBSET CONTENT DEF

COUNTER SECTION
(Screen 3 of 3)

PACKET FORMAT			
Pkt CN	Name	APID	Format Code (HEX)

COUNTER			
Counter PCN			
Primitive PUI			
Start Value			
Offset			

SUBSET FORMATS	
Subset ID	Code (HEX)

PARAMETERS											
PCN	Name	Primitive PUI			Data Type	Parameter Comp.	Sample Comp.	Sample Rate	Sample Offset	Group Sample	Group Offset
		device	seq num	signal type							

SAMPLING LOCATION			
Syllable Number	Start Word	Start Bit	Data Length
		Total Data Length =	

TABLE A–24 INSTRUCTIONS FOR COMPLETING COMMAND INIT SCREEN A–24
(Page 1 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
CCN	Character	7	Enter the unique identifier for each command. The first three characters should be an alphanumeric identifier, which should be used to group associated payload measurements. The remaining four characters should be numeric and in sequential order for each of the three alphanumeric identifiers (i.e. each alphanumeric set should start with the number 1.) This field is used to correlate the data between tables.	None	PD
Command Mnemonic	Character	20	Enter a unique descriptive name. This mnemonic will be used to issue this command at the POIC.	None	PD
Cmd Name	Character	89	Enter a descriptive technical name for each command generated by the payload.	None	PD
Command Desc	Character	250	Enter the complete text that describes the action performed by command.	None	PD
Device	Character	8	Displays Command PUI Device values for this CCN.	Auto populated.	DSM
Seq Num	Character	4	Enter the ninth, tenth, eleventh and twelfth characters of the Command PUI that represent the unique alphanumeric Sequence Number for this CCN.	A set of legal values assigned at the discretion of the data provider. Numeric values are preferred for the sequence number, but alphabetical characters are allowed.	DSM
Signal Type	Character	1	Enter the thirteenth character of the Command PUI that represents the Signal Type for this CCN.	A set of legal values to encode this field is listed in Appendix F of D684–10056–01 Rev. K.	DSM
Length	Number	3	Enter the number of words required to hold the command as a digital signal, starting with command data word 1.	13–53 The length does not include the CCSDS header, spare word, legal station mode, and checksum.	PD
Variable Length	Character	1	Check this box if this command is a variable length command; otherwise leave blank.	If blank, then a value must be entered in the Length field.	PD

TABLE A–24 INSTRUCTIONS FOR COMPLETING COMMAND INIT SCREEN A–24
(Page 2 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Cmd Type	Character	1	Select “P” (Predefined) or “M” (Modifiable) for the command type.	P= Pre–defined M= Modifiable	PD
PLMDM	Character	1	Check this box to initiate this command from the PLMDM; otherwise leave blank.	None	PD
PCS	Character	1	Check this box to initiate this command from the PLMDM; otherwise leave blank.	None	PD
T/L	Character	1	Check this box to initiate this command from the PLMDM; otherwise leave blank.	None	PD
POIC	Character	1	Check this box to initiate this command from the PLMDM; otherwise leave blank.	None	PD
Laptop	Character	1	Check this box to initiate this command from the EXPRESS Laptop; otherwise leave blank.	None	PD
Remote	Character	1	Check this box to initiate this command from a Remote Ground Site location; otherwise leave blank.	None	PD
Shuttle MPLM	Character	1	Check this box to initiate this command from the Shuttle MPLM; otherwise leave blank.	None	PD

SCREEN A–24 COMMAND INIT
(Screen 1 of 1)

C C N	Command Mnemonic	Cmd Name	Cmd Desc	Command PUI			Length	Variable Length	Cmd Type	Originated From						Shuttle MPLM Req5
				Device	Seq Num	Signal Type				PLMDM	PCS	T/L	POIC	Laptop	Remote	

TABLE A–25 INSTRUCTIONS FOR COMPLETING COMMAND DEF SCREEN A–25
(Page 1 of 1)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
CCN	Character	7	Display Command Correlation Number from A–24.	Auto populated from A–24.	PD
Command Mnemonic	Character	20	Display the unique descriptive Command mnemonic.	Auto populated from A–24.	PD
Device	Character	8	Displays Command PUI Device values for this CCN.	Auto populated.	DSM
Seq Num	Character	4	Displays Command PUI Sequence Numbers that were entered on A–24. (PUI).	Auto populated from A–24.	DSM
Signal Type	Character	1	Displays Command PUI Signal Type value that was entered on A–24.	Auto populated from A–24.	DSM
Critical	Character	1	Check this box to initiate a Critical command; otherwise leave blank.	None	PD
Hazard	Character	1	Check this box to initiate a Hazardous command; otherwise leave blank.	None	PD
Std Mode	Character	1	Check this box to initiate a command while ISS is in Standard Mode; otherwise leave blank.	None	PD
Microgravity Mode	Character	1	Check this box to initiate a command while ISS is in Microgravity Mode; otherwise leave blank.	None	PD

SCREEN A–25 COMMAND DEF
(Screen 1 of 1)

POIC/REMOTE DEFINITION								
CCN	Command Mnemonic	Command PUI			Critical	Hazard	Std Mode	Microgravity Mode
		Device	Seq Num	Signal Type				

TABLE A–26 INSTRUCTIONS FOR COMPLETING PLMDM SCREEN A–26
(Page 1 of 1)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
CCN	Character	7	Display Command Correlation Number from A–24.	Auto populated from A–24.	PD
Command Mnemonic	Character	20	Display the unique descriptive Command mnemonic.	Auto populated from A–24.	PD
Device	Character	8	Displays Command PUI Device values for this CCN.	Auto populated.	DSM
Seq Num	Character	4	Displays Command PUI Sequence Numbers that were entered on A–24. (PUI).	Auto populated from A–24.	DSM
Signal Type	Character	1	Displays Command PUI Signal Type value that was entered on A–24.	Auto populated from A–24.	DSM
Shut–down	Character	1	Shut–down: Check this box if this is a shutdown command, to be issued in response to a payload shutdown notification command; otherwise, leave blank. This field is a flag to indicate that this command is a shutdown command.	None	PD
Stand–by	Character	1	Stand–by: Check this box if this a standby command, to be issued in response to a payload standby notification command; otherwise, leave blank. This field is a flag to indicate that this command is a standby command.	None	PD
Start–up	Character	1	Start–up: Check this box if this is a startup command, to be issued in response to a payload startup notification command; otherwise, leave blank. This field is a flag to indicate that this command is a start–up command.	None	PD
Exception Response Command	Character	1	Exception Response Command: Check this box if this command is initiated on–board, in response to a limit exception.	None.	PD

SCREEN A–26 PLMDM
(Screen 1 of 1)

CCN	Command Mnemonic	Command PUI			Shutdown	Standby	Start–up	Exception Response Command
		Device	Seq Num	Signal Type				

TABLE A–27 INSTRUCTIONS FOR COMPLETING POIC / REMOTE SCREEN A–27
(Page 1 of 1)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
CCN	Character	7	Display Command Correlation Number from A–24.	Auto populated from A–24.	PD
Command Mnemonic	Character	20	Display the unique descriptive Command mnemonic.	Auto populated from A–24.	PD
Device	Character	8	Displays Command PUI Device values for this CCN.	Auto populated.	DSM
Seq Num	Character	4	Displays Command PUI Sequence Numbers that were entered on A–24. (PUI).	Auto populated from A–24.	DSM
Signal Type	Character	1	Displays Command PUI Signal Type value that was entered on A–24.	Auto populated from A–24.	DSM
POIC	Character	1	Displays a check in this box if checked in A–24.	Auto populated from A–24.	PD
Remote	Character	1	Displays a check in this box if checked in A–24.	Auto populated from A–24.	PD
Time Constraint	Number	14	Enter the number of seconds that must elapse after issuing this command before another command can be issued.	Time in seconds.	PD
Verification Delay	Number	14	Enter the number of seconds to continue checking Telemetry Verifiers after a command has been issued.	Time in seconds.	PD
Telemetry Ver-ification	Character	1	Check this box if this command requires Telemetry Verification.	None	PD
Initial State	Character	1	Select “E” (Enable) or “D” (Disable) for the initial state of this command.	E= Enable D= Disable	PD

SCREEN A–27 POIC/REMOTE
(Screen 1 of 1)

POIC/REMOTE DEFINITION										
CCN	Command Mnemonic	Command PUI			POIC	Remote	Time Constraint	Verification Delay	Telemetry Verification	Initial State
		Device	Seq Num	Signal Type						

TABLE A–28 INSTRUCTIONS FOR COMPLETING TLM VERIFICATION SCREEN A–28
(Page 1 of 1)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
CCN	Character	7	Display Command Correlation Number from A–24.	Auto populated from A–24.	PD
Command Mnemonic	Character	20	Display the unique descriptive Command mnemonic.	Auto populated from A–24.	PD
Device	Character	8	Displays Command PUI Device values for this CCN.	Auto populated.	DSM
Seq Num	Character	4	Displays Command PUI Sequence Numbers that were entered on A–24. (PUI).	Auto populated from A–24.	DSM
Signal Type	Character	1	Displays Command PUI Signal Type value that was entered on A–24.	Auto populated from A–24.	DSM
PCN	Character	7	Enter a unique identifier for each command.	none	PD
Device	Character	8	Displays the Primitive PUI Device values associated with its PCN.	Auto populated from A–1. If the Primitive PUI exist.	DSM
Seq Num	Character	4	Displays Primitive PUI Sequence Numbers associated with its PCN.	Auto populated from A–3. If the Primitive PUI exist.	DSM
Signal Type	Character	1	Displays Primitive PUI Signal Type value associated with its PCN.	Auto populated from A–3. If the Primitive PUI exist.	DSM
Data Type	Character	5	Displays the Data Type that associated with its Telemetry Measurement PCN.	Auto populated from A–4.	PD
State Code	Character	25	Enter the expected state code for the measurement when the data is within the state code conversion measurement.		PD
Range Low	Number	31,15	Enter the low end of the range in engineering units for measurement. If this field is used do not fill in the State Code field.		PD
Range High	Number	31,15	Enter the high end of the range in engineering units for the measurement. If this field is used do not fill in the State Code field.		PD

SCREEN A–28 TLM VERIFICATION
(Screen 1 of 1)

COMMANDS				
CCN	Command Mnemonic	Command PUI		
		Device	Seq Num	Signal Type

TELEMETRY VERIFICATION								
PCN	Primitive PUI			Data Type	State Code		Low Range	High Range
	Device	Seq Num	Signal Type			OR		

TABLE A–29 INSTRUCTIONS FOR COMPLETING FIELD INIT SCREEN A–29
(Page 1 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
CCN	Character	7	Display Command Correlation Number from A–24.	Auto populated from A–24.	PD
Command Mnemonic	Character	20	Display the unique descriptive Command mnemonic.	Auto populated from A–24.	PD
Device	Character	8	Displays Command PUI Device values for this CCN.	Auto populated.	DSM
Seq Num	Character	4	Displays Command PUI Sequence Numbers that were entered on A–24. (PUI).	Auto populated from A–24.	DSM
Signal Type	Character	1	Displays Command PUI Signal Type value that was entered on A–24.	Auto populated from A–24.	DSM
Length	Number	3	Displays the number of words required to hold the command as a digital signal, starting with command data word 1.	Auto populated from A–24.	PD
Variable Length Flag	Character	1	Displays check box from A–24 if this command length was selected as variable.	Auto populated from A–24.	PD
Field Mnemonic	Character	20	Enter a user–friendly mnemonic for this command field.	None	PD
Field Description	Character	100	Enter text description of this command field.	None	PD
Start Word	Number	3	Enter the word within the header where the field begins, which is the start word of a command field. The first word of the header is word 1.	1–53	PD
Start Bit	Number	2	Enter the bit within the start word where the field begins. The first bit is bit 0.	0–15	PD
Field Length	Number	2	Enter the length of the field. If using string data, then use number of bytes; otherwise use number of bits. Use null for variable length fields.	Data type dependent.	PD
Variable Length Flag	Character	1	Check this box if this command is a variable length command; otherwise leave blank.	If blank, then a value must be entered in the Length field.	PD

TABLE A–29 INSTRUCTIONS FOR COMPLETING FIELD INIT SCREEN A–29
(Page 2 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Input Data Type	Character	1	Select the type of input data.	A=Alphanumeri B=Binary D–Decimal G–Scientific Notation H–Hexadecimal O–Octal See MSFC DOC–1949C VOL.5 Appendix I.	PD
Uplink Data Type	Character	5	Select the data type conversion prior to uplink.	FEEE=IEEE Floating Point FIBM=IBM Floating Point IBCD=Binary Coded Decimal ICHK=Checksum IDIS=Discrete IDSI=Distended Signed Integer IMAG=Signed Integer IPAR=Parity Bit ITWO=Two's Complement Signed Integer IUNS=Unsigned Integer IUNSB=Unsigned Byte–swapped integer SASC=ASCII Characters SASCB=ASCII Characters byte–swapped SEBC=EBC Dic Characters SUND=Undefined Byte String Valid values defined in MSFC–DOC–1949C VOL.5 Appendix I.	PD
Cmd Field Type	Character	1	Select "P" (Predefined) or "M" (Modifiable) for the command type.	P= Pre–defined M= Modifiable	PD
Data/Value	Character	256	Enter the data value or the initial data value for the predefined fields.	Valid values defined in MSFC–DOC–1949C VOL.5 Appendix G.	PD

SCREEN A–29 FIELD INIT
(Screen 1 of 1)

COMMANDS						
CCN	Command Mnemonic	Command PUI			Length	Variable Length Flag
		Device	Seq Num	Signal Type		

COMMAND FIELD INITIALIZATION									
Field Mnemonic	Field Description	Start Word	Start Bit	Field Length	Variable Length Flag	Input Data Type	Uplink Data Type	Cmd Field Type	Data / Value

TABLE A–30 INSTRUCTIONS FOR COMPLETING FIELD DEF TABLE SCREEN A–30
(Page 1 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
CCN	Character	7	Display Command Correlation Number from A–24.	Auto populated from A–24.	PD
Command Mnemonic	Character	20	Display the unique descriptive Command mnemonic.	Auto populated from A–24.	PD
Device	Character	8	Displays Command PUI Device values for this CCN.	Auto populated.	DSM
Seq Num	Character	4	Displays Command PUI Sequence Numbers that were entered on A–24. (PUI).	Auto populated from A–24.	DSM
Signal Type	Character	1	Displays Command PUI Signal Type value that was entered on A–24.	Auto populated from A–24.	DSM
Length	Number	3	Displays the number of words required to hold the command as a digital signal, starting with command data word 1.	Auto populated from A–24.	PD
Variable Length Flag	Character	1	Displays check box from A–24 if this command length was selected as variable.	Auto populated from A–24.	PD
Field Mnemonic	Character	20	Displays the user–friendly mnemonic entered on A–29 for this command field.	Auto populated from A–29.	PD
Field Description	Character	100	Displays the text description entered on A–29 of this command field.	Auto populated from A–29.	PD
Engineering Units	Character	30	Enter the engineering unit associated with command field data value.	None	PD
Range Low	Character	32	Enter the low end range in engineering units for the measurement on the valid command field.	None	PD
Range High	Character	32	Enter the high end range in engineering units for the measurement on the valid command field.	None	PD
Cal Type	Character	2	Enter the type of calibration conversion process.	N – No calibration PC – Polynomial Calibation PP – Point Pair Calibration SC – State Code Calibration	PD

TABLE A–30 INSTRUCTIONS FOR COMPLETING FIELD DEF TABLE SCREEN A–30
(Page 2 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Cal Switch Flag	Character	1	Check this box if this command requires Calibration Switching.	None	PD
Tolerance	Character	32	Enter the maximum deviation allowed between the calibrated value and the nearest integer.	Default=NULL For integer uplink values to which calibration has been applied, a tolerance may be specified defining the maximum deviation allowed between the calibrated value and the nearest integer.	PD

SCREEN A–30 FIELD DEF
(Screen 1 of 1)

COMMANDS						
CCN	Command Mnemon-ic	Command PUI			Length	Variable Length Flag
		Device	Seq Num	Signal Type		

COMMAND FIELD DEFINITION							
Field Mnemonic	Field Description	Engineering Units	Range Low	Range High	Cal Type	Cal Switch Flag	Tolerance

TABLE A–31 INSTRUCTIONS FOR COMPLETING POINT PAIRS SCREEN A–31
(Page 1 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
CCN	Character	7	Display Command Correlation Number from A–24.	Auto populated from A–24.	PD
Command Mnemonic	Character	20	Display the unique descriptive Command mnemonic.	Auto populated from A–24.	PD
Device	Character	8	Displays Command PUI Device values for this CCN.	Auto populated.	PD
Seq Num	Character	4	Displays Command PUI Sequence Numbers that were entered on A–24. (PUI).	Auto populated from A–24.	DSM
Signal Type	Character	1	Displays Command PUI Signal Type value that was entered on A–24.	Auto populated from A–24.	DSM
Cal SW Field Mnemonic	Character	20	Enter the command field mnemonic in the Calibration Switch field to identify the command field. This command field data value is compared to the low and high range values to determine whether this calibration set is to be applied.	Note that the command field mnemonic is different than the Field Mnemonic, and the two fields must be part of the same command.	PD
Low Range	Character	32	Enter the minimum low range value for the calibration switching.	If the data value for calibration switching is within the defined range, then the associated calibration set is applied to the command field.	PD
High Range	Character	32	Enter the maximum high range value for the calibration switching.	If the data value for calibration switching is within the defined range, then the associated calibration set is applied to the command field.	PD
Field Mnemonic	Character	20	Displays the user–friendly mnemonic entered on A–29 for this command field.	Auto populated from A–29.	PD
Input Data Type	Character	1	Displays the type of input data selected from A–29.	Auto populated from A–29. See MSFC–DOC–1949C VOL.5 Appendix I.	PD
Eng Units	Character	30	Displays the engineering unit associated with command field data value entered on A–30.	Auto populated from A–30.	PD

TABLE A–31 INSTRUCTIONS FOR COMPLETING POINT PAIRS SCREEN A–31
(Page 2 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Default Set Number	Number	3	Enter the default calibration set number.	1–100	PD
Set Number	Number	3	Enter the point pair calibration set for the command field that is to be calibrated.	1–100	PD
Pair Count	Number	14	Enter the decimal integer representing the raw count value of the point pair.	None	PD
Pair Value	Number	31,15	Enter the Engineering Unit equivalent of the Counts column. Include sign and decimal points, if applicable.	None	PD

SCREEN A–31 POINT PAIRS
(Screen 1 of 1)

COMMAND PARAMETERS				
CCN	Command Mnemonic	Command PUI		
		Device	Seq Num	Signal Type

CALIBRATION SWITCHING	
Cal SW Field Mnemonic	
Low Range	
High Range	

FIELD PARAMETERS		
Field Mnemonic	Input Data Type	Eng. Units

POINT PAIRS			
Default Set Number	Set Number	Pair Count	Pair Value

TABLE A–32 INSTRUCTIONS FOR COMPLETING POLYNOMIALS SCREEN A–32
(Page 1 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
CCN	Character	7	Display Command Correlation Number from A–24.	Auto populated from A–24.	PD
Command Mnemonic	Character	20	Display the unique descriptive Command mnemonic.	Auto populated from A–24.	PD
Device	Character	8	Displays Command PUI Device values for this CCN.	Auto populated.	DSM
Seq Num	Character	4	Displays Command PUI Sequence Numbers that were entered on A–24. (PUI).	Auto populated from A–24.	DSM
Signal Type	Character	1	Displays Command PUI Signal Type value that was entered on A–24.	Auto populated from A–24.	DSM
Cal SW Field Mnemonic	Character	20	Enter the command field mnemonic in the Calibration Switch field to identify the command field. This command field data value is compared to the low and high range values to determine whether this calibration set is to be applied.	Note that the command field mnemonic is different than the Field Mnemonic, and the two fields must be part of the same command.	PD
Low Range	Character	32	Enter the minimum low range value for the calibration switching.	If the data value for calibration switching is within the defined range, then the associated calibration set is applied to the command field.	PD
High Range	Character	32	Enter the maximum high range value for the calibration switching.	If the data value for calibration switching is within the defined range, then the associated calibration set is applied to the command field.	PD
Field Mnemonic	Character	20	Displays the user–friendly mnemonic entered on A–29 for this command field.	Auto populated from A–29.	PD
Input Data Type	Character	1	Displays the type of input data selected from A–29.	Auto populated from A–29. See MSFC–DOC–1949C VOL.5 Appendix I.	PD
Eng Units	Character	30	Displays the engineering unit associated with command field data value entered on A–30.	Auto populated from A–30.	PD
Default Set Number	Number	3	Enter the default calibration set number.	1–100	PD

TABLE A–32 INSTRUCTIONS FOR COMPLETING POLYNOMIALS SCREEN A–32
(Page 2 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Set Number	Number	3	Enter the point pair calibration set for the command field that is to be calibrated.	1–100	PD
Low Counts	Number	27,13	Enter the minimum low raw counts value support by this calibration set.	None	PD
High Counts	Number	27,13	Enter the maximum high raw counts value support by this calibration set.	None	PD
Degree	Number	1	Define the degree of the polynomial equation.	1–5	PD
Coefficient 0	Character	16	Enter the polynomial coefficient 0.		PD
Coefficient 1	Character	16	Enter the polynomial coefficient 1.		PD
Coefficient 2	Character	16	Enter the polynomial coefficient 2.		PD
Coefficient 3	Character	16	Enter the polynomial coefficient 3.		PD
Coefficient 4	Character	16	Enter the polynomial coefficient 4.		PD
Coefficient 5	Character	16	Enter the polynomial coefficient 5.		PD

SCREEN A–32 POLYNOMIALS
(Screen 1 of 1)

COMMAND PARAMETERS				
CCN	Command Mnemonic	Command PUI		
		Device	Seq Num	Signal Type

CALIBRATION SWITCHING	
Cal SW Field Mnemonic	
Low Range	
High Range	

FIELD PARAMETERS		
Field Mnemonic	Input Data Type	Eng. Units

POLYNOMIALS										
Default Set Number	Set Number	Low Counts	High Counts	Degree	Coefficient 0	Coefficient 1	Coefficient 2	Coefficient 3	Coefficient 4	Coefficient 5

TABLE A–33 INSTRUCTIONS FOR COMPLETING STATE CODES SCREEN A–33
(Page 1 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
CCN	Character	7	Display Command Correlation Number from A–24.	Auto populated from A–24.	PD
Command Mnemonic	Character	20	Display the unique descriptive Command mnemonic.	Auto populated from A–24.	PD
Device	Character	8	Displays Command PUI Device values for this CCN.	Auto populated.	DSM
Seq Num	Character	4	Displays Command PUI Sequence Numbers that were entered on A–24. (PUI).	Auto populated from A–24.	DSM
Signal Type	Character	1	Displays Command PUI Signal Type value that was entered on A–24.	Auto populated from A–24.	DSM
Cal SW Field Mnemonic	Character	20	Enter the command field mnemonic in the Calibration Switch field to identify the command field. This command field data value is compared to the low and high range values to determine whether this calibration set is to be applied.	Note that the command field mnemonic is different than the Field Mnemonic, and the two fields must be part of the same command.	PD
Low Range	Character	32	Enter the minimum low range value for the calibration switching.	If the data value for calibration switching is within the defined range, then the associated calibration set is applied to the command field.	PD
High Range	Character	32	Enter the maximum high range value for the calibration switching.	If the data value for calibration switching is within the defined range, then the associated calibration set is applied to the command field.	PD
Field Mnemon-ic	Character	20	Displays the user–friendly mnemonic entered on A–29 for this command field.	Auto populated from A–29.	PD
Input Data Type	Character	1	Displays the type of input data selected from A–29.	Auto populated from A–29. See MSFC–DOC–1949C VOL.5 Appendix I.	PD

TABLE A–33 INSTRUCTIONS FOR COMPLETING STATE CODES SCREEN A–33
(Page 2 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Eng units	Character	30	Displays the engineering unit associated with command field data value entered on A–30.	Auto populated from A–30.	PD
Default Set Number	Number	3	Enter the default calibration set number.	1–100	PD
Set Number	Number	3	Enter the state code calibration set for the command field that is to be calibrated.	1–100	PD
State Code	Character	25	Enter the state code equivalent of the Counts column when the data is within the state code conversion measurement.	None	PD
Counts	Number	14	Enter the decimal integer representing the raw count of the state code.		PD

SCREEN A–33 STATE CODES
(Screen 1 of 1)

COMMAND PARAMETERS				
CCN	Command Mnemonic	Command PUI		
		Device	Seq Num	Signal Type

CALIBRATION SWITCHING	
Cal SW Field Mnemonic	
Low Range	
High Range	

FIELD PARAMETERS		
Field Mnemonic	Input Data Type	Eng. Units

STATE CODES			
Default Set Number	Set Number	State Code	Counts

TABLE A–34 INSTRUCTIONS FOR COMPLETING BROADCAST SCREEN A–34
(Page 1 of 1)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Using Broadcast Ancillary Data?	Character	1	Select “yes” if the payload will require Broadcast Data. If yes is selected, then the Broadcast Ancillary Data field in the Software Interface Applicability Table will contain an “X.” If “no” is selected, the payload will not require Broadcast data.	YES or NO	PD
Using Broadcast Time?	Character	1	Select “yes” if the payload will require Broadcast Time. If yes is selected, then the Broadcast Ancillary Data field in the Software Interface Applicability Table will contain an “X.” If “no” is selected, the payload will not require Broadcast Time.	YES or NO	PD

SCREEN A–34 BROADCAST
(Screen 1 of 1)

broadcast ancillary date and time	
Will this Payload be using Broadcast Ancillary Data?	❑ YES ❑ NO
Will this Payload be using Broadcast Time?	❑ YES ❑ NO

TABLE A–35 INSTRUCTIONS FOR COMPLETING ANCILLARY SCREEN A–35
(Page 1 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Data Set Number	Number	3	Enter the number of the unique payload ancillary data set to which this requested ancillary data item has been assigned.	1–100	PD
Transmit Rate	Number	2	The default rate is 1.0 Hz fixed.	Default 1.0Hz 0.1 – 1.0 Hertz	PD
Unique Ancillary Data Sets	N/A	N/A	Click button to access Unique Ancillary Data Set document.	N/A	PD
PUI Type	Character	1	Enter “B”, “P”, or “TLM” for the PUI Type for this parameter.	B= Broadcast Ancillary Data P= Payload Ancillary Data TLM = Telemetry	PD
PCN	Character	7	Select the unique identifier for this measurement.	Parameter is selected from a valid list of values derived from the A–11 On–board where the ancillary flag=Y.	PD
Device	Character	8	Enter the Primitive PUI Device for this parameter. First two characters are listed in Appendix A. Third character is listed in Appendix B. Fourth, fifth, and sixth characters are listed in Appendix C. Seventh and eighth characters are listed in Appendix D.	A set of legal values to encode this field is listed in Appendices of ISSP D684–10056–01 Rev. K and D684–11300–01.	PD
Seq Num	Character	4	Enter the Primitive PUI Sequence Number for this parameter.	Sets of legal values are assigned at the discretion of the data provider.	PD
Signal Type	Character	1	Enter the Primitive PUI Signal Type value for this parameter. The thirteenth character is listed in Appendix F.	A set of legal values to encode this field is listed in Appendices of ISSP D684–10056–01 Rev. K and D684–11300–01.	PD

TABLE A–35 INSTRUCTIONS FOR COMPLETING ANCILLARY SCREEN A–35
(Page 2 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Parameter Technical Name	Character	89	Enter the unique name to identify the requested ancillary parameter.	Alphanumeric	PD
Parameter Description	Character	250	Enter the description of the requested ancillary parameter.	Alphanumeric	PD
Word Number	Number	2	Enter the word number within the unique payload ancillary data set to which this requested ancillary data item have been assigned.	10–32	PSI

SCREEN A–35 ANCILLARY
(Screen 1 of 1)

ANCILLARY DATA SET	
Data Set Number	Transmit Rate
Unique Ancillary Data Sets	

ANCILLARY DATA REQUEST							
PUI Type	PCN	Primitive PUI			Parameter Technical Name	Parameter Description	Word Number
		Device	Seq Num	Signal Type			

TABLE A–36 INSTRUCTIONS FOR COMPLETING FTS SCREEN A–36
(Page 1 of 1)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
File Name	Character	20	Enter the descriptive name for the file. (Enter the complete directory path including the slash (\).	None	PD
File ID Number	Number	5	Enter a unique identification number for each separate file.	0–500	PD
File Size (Bytes)	Number	6	Enter the total number of 8 bit bytes contained in the data file.	None	PD
File Description	Character	250	Briefly describe the type of file and its application.	None	PD
File Access Read	Character	1	Check this box if this payload has Read Access Authorization for this file on the PLMDM. If this box is checked, then the File/Data Load field of the Software Interface Summary table will contain an “X.”	None	PD
Authorization Write	Character	1	Check this box if this payload has Write Access Authorization for this file on the PLMDM. If this box is checked, then the File Dump field of the Software Interface Summary table will contain an “X.”	None	PD

SCREEN A–36 FTS
(Screen 1 of 1)

PLMDM FILE TRANSFERS					
File Name	File ID Number	File Size (Bytes)	File Description	File Access Read	Authorization Write

TABLE A–37 INSTRUCTIONS FOR COMPLETING TIMELINER DEF SCREEN A–37
(Page 1 of 1)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Bundle Name	Character	20	Enter the Bundle name for each separate bundle in all caps.	ALL CAPS	PD
ID Number	Number	5	Enter a unique identification number for each Timeliner procedure bundle.	0–65535 Maximum of 50 out of 500 possible bundles can be active.	PSIV
Bundle File Name	Character	25	Enter a unique file name that contains the complete directory path and starts with backslash (\.TLX).	Use “ \ TLX“ for each bundle name.	PD
Bundle File Description	Character	250	Enter descriptive information about the bundle file, such as how the bundle is initiated.	none	PD
Halt Bundle	Character	1	Check this box if this payload is authorized to halt this bundle.	None	PD
Sequence Name	Character	32	Enter a descriptive name of the Timeliner procedure bundle sequence in all caps.	ALL CAPS. Reference Timeliner Automated Procedures SSP58709–ANX7 for a description of the required naming convention for Timeliner bundles.	PD
Sequence ID Number	Number	5	Enter a unique identification number for each Timeliner procedure bundle sequence.	0–65535	PSIV
Sequence De-scription	Character	250	Enter descriptive information about the sequence definition.	Alphanumeric	PD
Start Sequence	Character	1	Check this box if this payload is authorized to start this bundle.	None	PD
Stop Sequence	Character	1	Check this box if this payload is authorized to stop this bundle.	None	PD
Resume Se-quence	Character	1	Check this box if this payload is authorized to resume this bundle.	None	PD

SCREEN A–37 TIMELINER DEF
(Screen 1 of 1)

TIMELINER BUNDLE DEFINITION				
Bundle Name	Bundle ID Number	Bundle File Name	Bundle File Description	Halt Bundle

SEQUENCE DEFINITION					
Sequence Name	Sequence ID Number	Sequence Description	Start Sequence	Stop Sequence	Resume Sequence

TABLE A–38 INSTRUCTIONS FOR COMPLETING VIDEO SCREEN A–38
(Page 1 of 1)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Uplink	Character	1	Select “yes” if the payload requires video uplink. Select “no” if the payload does not require video uplink.	YES or NO	PD
Rate (Mbps)	Number	2	Specify the rate of the video uplink.	Mbps	PD
Digital Duration (sec)	Number	5	Specify the duration of the digital video uplink.	0–99999 seconds	PD
Via HRDL?	Character	1	Select “yes” if the payload requires video downlink. Select “no” if the payload does not require video downlink.	YES or NO	PD
Rate (Mbps)	Number	2	Specify the rate of the video downlink.	Megabits per second (A megabit is 1,048,576 bits.)	PD
Duration (sec)	Number	5	Specify the duration of the digital video downlink	0–99999 seconds	PD
Via ISS Video Baseband Signal Processor?	Character	1	Select “yes” if the payload requires analog video downlink via ISS Video Baseband Signal Processor. Select “no” if the payload does not require analog video downlink via ISS Video Baseband Signal Processor.	YES or NO	PD
Resolution	Character	1	Select 8–bit or 6–bit analog video downlink.	8–bit or 6–bit	PD
Frame to Frame Rate	Number	5,3	Select the frame rate for the analog downlink.	Frame Rates: 1.875 7.5 15 30 30	PD
Frame Rate Type	Character	20	Select a half or full frame per second for the frame rate type.	Half–Frame/Sec Full–Frame/Sec	PD
Duration (sec)	Number	5	Enter the duration of the analog video downlink.	0–99999 seconds	PD

SCREEN A–38 VIDEO
(Screen 1 of 1)

VIDEO UPLINK	
UPLINK	❑ YES ❑ NO
RATE / MBPS	❑ YES ❑ NO
DIGITAL DURATION / SEC	❑ YES ❑ NO
VIDEO DIGITAL DOWNLINK	
VIA HRDL	❑ YES ❑ NO
RATE	❑ YES ❑ NO
DURATION	❑ YES ❑ NO
VIDEO ANALOG DOWNLINK	
VIA ISS VIDEO BASEBAND SIGNAL PROCESSOR?	❑ YES ❑ NO
RESOLUTION	
FRAME TO FRAME RATE	
FRAME RATE TYPE	
DURATION / SEC	

TABLE A–39 INSTRUCTIONS FOR COMPLETING GROUND CONTACT INFO SCREEN A–39
(Page 1 of 1)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
First Name	Character	25	Enter first name of the contact.	Alphanumeric	PD
Mi	Character	1	Enter middle initial of the contact.	Alphanumeric	PD
Last Name	Character	25	Enter last name of the contact.	Alphanumeric	PD
Org	Character	35	Enter name of the organization for the contact.	Alphanumeric	PD
Street 1	Character	35	Enter name of street address1 for the contact	Alphanumeric	PD
Street 2	Character	35	Enter name of street address2 for the contact.	Alphanumeric	PD
State	Character	20	Enter name of state or province for the contact.	Alphanumeric	PD
Zip	Character	15	Enter zip code or postal code of the contact.	Alphanumeric	PD
Country	Character	20	Enter name of the country for the contact.	Alphanumeric	PD
Phone	Character	15	Enter phone number of the contact.	Alphanumeric	PD
Title	Character	35	Enter title of the contact.	Alphanumeric	PD
Internal Mail	Character	15	Enter contact’s internal mail code.	Alphanumeric	PD
Pager	Character	15	Enter contact’s pager number.	Alphanumeric	PD
Fax	Character	15	Enter contact’s fax number.	Alphanumeric	PD
Email	Character	25	Enter contact’s email address.	Alphanumeric	PD
WWW Page Address	Character	25	Enter contact’s WWW page address.	Alphanumeric	PD
Other	Character	20	Enter any other information about the contact.	Alphanumeric	PD

SCREEN A–39 CONTACT INFO

customer contact information

First Name | **MI** | **Last Name**

Title

Org

Internal Mail

Street 1

Pager

Street 2

Fax

City

E–Mail

State | **Zip**

WWW Page Address

Country

Other

Phone

TABLE A–40 INSTRUCTIONS FOR COMPLETING GROUND PL INFO SCREEN A–40
(Page 1 of 1)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Information	Character	250	Enter the general information for this payload.	Alphanumeric	PD
Description	Character	250	Enter the description for this payload, including system functionality, operations, and relationship to other payloads.	Alphanumeric	PD

A–40 PL INFO
(Screen 1 of 1)

PAYLOAD INFORMATION	
Information	
Description	

TABLE A–41 INSTRUCTIONS FOR COMPLETING PROCESS SCREEN A–41
(Page 1 of 1)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Lminus Stage	Character	4	Displays the Lminus Stage time frame for this payload.	Auto populates: L–25 through L+1.	PD
Development Level	Character	11	Displays the development level for this payload.	Auto populates: Preliminary, Interim, Final, and Post Launch.	PD
Control Level	Character	10	Displays the control level for this payload	Auto populates: Private, Submitted, Preliminary, Final, Draft, and Baselined.	PD
Responsible User	Character	11	Displays the responsible user for this payload.	Auto populated.	PD
Promote To	Character	10	Displays the Promote Status of the payload.	Auto populated.	PD
Description of Process	Character	700	Displays the description of the Lminus Stage L–25 through L+1.	Auto populated.	PD

A–41 PROCESS
(Screen 1 of 1)

C&DH CM PROCESS					
Lminus Stage	Development Level	Control Level	Responsible User	Promote To	Description of Process

TABLE A–42 INSTRUCTIONS FOR COMPLETING PROMOTE SCREEN A–42
(Page 1 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Data Set	None	None	Select “CDH” data set.	ICD Issue B PVP Issue B CDH Vol. III/IV ICD/PVP Vol. VI–B	DSM
Increment	None	None	Select the “Increment”.	Increment 0 – Increment 19	DSM
Flight	Character	N/A	Select the flight number.	Example: 6A, UF–1, etc.	DSM
New Status Level	Character	N/A	Select the new status control level.	Options: Private, Submitted, Preliminary, Final, Draft, and Baseline.	DSM
Process	Character	1	Check this box to promote or demote.	None	DSM
Option	Character	N/A	Displays the Main Tab Options for the promoted/ demoted data set.	Auto populated with one the following: PL Data, Rack Data, Telemetry, Commands, Services, PL Info, or Reports.	DSM
Increment	Character	N/A	Displays the Increment number for the promoted/ demoted data set.	Auto populated.	DSM
Flight	Character	N/A	Displays the flight number for the promoted/ demoted data set.	Auto populated.	DSM
Data Level	Character	N/A	Displays the data level number for the promoted/ demoted data set.	Auto populated with one the following: Private, Submitted, Preliminary, Final, Draft, and Baseline.	DSM
POP/Element/ Location	Character	N/A	Displays the POP/Element/Location for the promoted/demoted data set.	Auto populated.	DSM
Date	Character	N/A	Displays the date for the promoted/demoted data set.	Auto populated.	DSM
Select All Options	Character	1	Check this box to promote or demote all options.	None	DSM
Process	None	None	Check this box to promote or demote.	None	DSM

TABLE A–42 INSTRUCTIONS FOR COMPLETING PROMOTE SCREEN A–42
(Page 2 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Exit	None	None	Click to exit this screen.	None	DSM
Promotions/ Demotions Results Message	Character	N/A	Displays Promotion / Demotion result messages.	Alphanumeric	DSM

TABLE A–43 INSTRUCTIONS FOR COMPLETING DRAWINGS SCREEN A–43
(Page 1 of 1)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Number	Character	8	Enter the Drawing Number.	Alphanumeric	PD
Drawing Title	Character	20	Enter the title of the drawing.	Alphanumeric	PD
Zoom In	None	None	Click on the “Zoom In” button to increase the drawing magnification.	None	PD
Zoom Out	None	None	Click on the “Zoom Out” button to decrease the drawing magnification.	None	PD
Load Image	None	None	Click on the “Load Image” button to load the drawing.	None	PD
Drawing Area	Character	250	Displays the image of the drawing.	Alphanumeric	PD

APPENDIX B
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APPENDIX B
C&DH DATA BASE IMPLEMENTATION REQUIREMENTS

The Payload Data Library C&DH data base structure and user interface shall be implemented per the requirements outlined herein. This includes adherence to the table content and format defined in Appendix A as well as the Screen Column and Table Validation rules in Table B–1. Any deviation from these requirements must be approved by PSI.

Detailed requirements to be defined include the following:

- structure
- tabular list format
- frame–based data manipulation
- table navigation
- report generation
- C&DH column and table validation
- C&DH data set configuration management

B.1 STRUCTURE

The PDL structure shall be implemented to accommodate the co–existence of the same payload with different flight assignments. The Parameter Correlation Numbers shall be payload–unique and flight–unique. Payloads and sub–rack payloads shall be able to reuse and reassign parameter correlation numbers for each without affecting previous or future flight data.

B.2 TABULAR LIST FORMAT

The format of data entry forms presented by PDL and viewed by a user shall correspond to Tables A–1 through A–43. The data columns within a table shall be visible on one screen in a tabular format, to the maximum extent possible, for all tables. Large tables, in which the number of columns exceeds 9, shall be accommodated by maximizing the viewable screen area and/or separating the table into two or more parts per the screen.

B.3 FRAME–BASED DATA MANIPULATION

The user shall have the ability to display ”viewing frames”, or windows, of tabular data. The user shall be able to use a selection button to minimize or maximize the size of the window, move the window on the desktop, and scroll data either left/right or up/down. The user shall be able to select, copy and paste row(s) of data (”copy and paste”). In all cases, both the copy and paste row(s) of data shall have compatible field types to allow the user to perform the copy function. In addition, the user shall be informed with a dialog box that values are being over written. This copy function shall be available for the following screens as a minimum:

- LRDL (A–16) and MRDL (A–17)
- LRDL (A–16) and HRDL (A–18)
- MRDL (A–17) and HRDL (A–18)
- Polynomial (A–7) and PCS Polynomial Calibration (A–14)

B.4 TABLE NAVIGATION

Movement from one table to the next shall be accomplished using tabs, menus, and/or icon buttons, as well as logic, based upon the flow chart in Figure A–i. The user will not be given ”random access” to all tables, but will be directed to appropriate tables based upon previous entries into field entries or selections and check boxes. As a minimum, the user shall be able to navigate to/from next/previous tables, save new data, revert to previous data, enter new data, delete a data item, request help, find PCN ICCN or exit. Once a payload/flight is selected, the user shall remain within that domain until the user purposely selects a new payload/flight combination.

B.5 REPORT GENERATION

The user shall be able to obtain paper copies of C&DH data sets in a tabular format. The heading of each report shall contain, as a minimum, the following: table number, table name, payload name, flight designation, payload sub element, data set version, and development level. The footer of each report shall contain, as a minimum, the following date of report, time of report. The user shall be able to generate a preview or printed report layout as 1 report per page. Saved reports shall be available in either .pdf or ASCII test format.

B.5.1 STANDARD REPORT GENERATION

A standard set of reports shall be selectable for any payload and flight. The format of these reports shall correspond to that shown in Tables A–1 through A–43. Reports shall also be

available corresponding to Figures 3.1–1, 3.1.2.2–1, 3.1.2.2–2, 3.1.2.2–3, 3.1.2.2–4, 3.1.2.2–5, 3.1.2.2–6, 3.1.2.2–7, 3.1.2.2–8, 3.1.2.2–9, 3.2.1–1, 3.3.1–1, and 3.4.1–1.

B.5.2 CUSTOM REPORT GENERATION

In addition, the user shall be able to select the contents of a custom report as long as all the selected fields are related to the same parent PUI or Correlation Number. The user shall be able to sort the contents of a custom report based on any selected parameter, and based on any field of one or more characters within that parameter. For such a custom report, the column headings shall correspond to the headings in the standard report for the same data field. A custom report can be larger or smaller than a standard report. It will be up to the user to assure the selected fields will result in a readable report.

B.5.3 COMPARISON REPORT GENERATION

For any rack or sub–rack payload, a comparison function shall be available to the user allowing a New/old change list to be generated between any of the following subsets: individual data set development levels, archived data set and the latest data set, or specific ISS stages for any table.

The function shall check for matching Correlation Numbers in the PDL selected table and generate related reports as described below:

A. If a match exists, the records shall be compared for differences. If a difference exists then the difference between the 2 records shall be printed. A label shall be printed next to the Correlation Number indicating to which subset the data item belongs. For example, for a comparison between an archived data set (old) and the latest data set (new), the resultant records would appear as follows:

	CCN	Command Length	Command Word	Command Value	Created/ Changed By	Created/ Changed Date
New	HWS8005			0000		
Old	HWS8005			000F		

This printout shall indicate that data has been changed within a Correlation Number record.

B. If no match exists for the Correlation Number record from the new data set then the entire record shall be printed.

	CCN	Command Length	Command Word	Command Value	Created/ Changed By	Created/ Changed Date
New	HWS8005	50	31	0000		

This printout shall indicate that a new Correlation Number and its record has been added.

C. If no match exists for the Correlation Number record from the old data set then the entire record shall be printed.

	CCN	Command Length	Command Word	Command Value	Created/ Changed By	Created/ Changed Date
Old	HWS8005	50	31	0000		

This printout shall indicate that an old Correlation Number and its record has been deleted.

B.5.4 HAZARDOUS REPORTS

The user shall be able to generate a Hazardous report to verify the defined Hazardous Commands for the selected assigned payload, flight effectivity, subelement, and development level. The function shall provide a report with a listing of Hazardous Commands based on Correlation Numbers, Command PUI, Command Mnemonic, Name and Description.

B.6 C&DH COLUMN AND TABLE VALIDATION

Table B–1 defines the special functions to be carried out within certain fields of the C&DH data base. These functions include column and table validation, decision logic, and default values.

B.7 C&DH DATA SET CONFIGURATION MANAGEMENT

Each specific payload–unique and flight–unique C&DH data set shall be stored and retreived within PDL in the form of four separate versions: a preliminary version, an interim version, a final version, and a flight following version. Each version shall be reviewed and locked at the appropriate time prior to launch. These approval steps shall conform to the private, integrated and baselined control levels per the Payload Data Library Requirements Document, SSP 50478. Within the integrated control level, preliminary, final, submitted and draft control sub–levels shall also be provided. A summary of this configuration management process is described below. The mechanism to accomplish this C&DH configuration management process shall be implemented within PDL. All L–minus milestones shown are approximate.

At L–24, Payload Developers define unique software requirements and start data entry into the C&DH PRELIMINARY data set in PDL with SSP 57002 as a guide.

At L–17, Payload Developers promote their PRELIMINARY C&DH data set from the private level to the submitted level. PEI enters program level data as well as reviews the data set for completeness and accuracy against SSP 57002.

At L–16, the data set is locked per Payload Software Control Panel (PSCP) directive and PEI promotes the PRELIMINARY data set to the draft level in PDL for preliminary deliveries. The PRELIMINARY data set remains locked.

At L–15, PRELIMINARY data sets are copied into an INTERIM data set and sent to the private level to allow Payload Developers to update their data. Within this time period, PSIV delivers the preliminary flight products to the customer.

At L–13, Payload Developers promote their INTERIM C&DH data set from the private level to the submitted level. PEI enters program level data and reviews the data set for completeness and accuracy against SSP 57002.

At L–12, the data set is locked by PSCP directive and PEI promotes the INTERIM data set to the draft level in PDL for interim deliveries. The INTERIM data set remains locked.

At L–11, The data set is exported to PSIV and the INTERIM data sets are copied into a FINAL data set and sent to the private level to allow Payload Developers to update their data. Within this time period, PSIV delivers the interim flight products to the customer.

At L–8, Payload Developers promote their FINAL C&DH data set from the private level to the submitted level. The data set is locked by PSCP directive and PEI promotes the FINAL data set to the draft level in PDL for final deliveries. A CR is prepared and taken to the PCB for baselining. Within this time period, PDL exports Payload Data Sets for Flight X to the HOSC/POIC for the final data base file, and PSIV delivers the final flight products to the customer.

At L+1, PDL deletes the payload’s PRELIMINARY and INTERIM data sets and archives the FINAL data set.

TABLE B–1
C&DH COLUMN AND TABLE VALIDATION
SCREEN A–1 COLUMN LEVEL VALIDATION RULES FOR THE PAYLOAD SELECTION AREA (SHEET 1 OF 1)

NOTE: These fields will be the same for screens A–1 through A–2 and selection criteria can be redefined on these screens.

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Payload	Any CDH user. Payload Data Library (PDL) maintains a valid list of Payloads for user selection. The selection list includes only the Payloads the user has Authority to see. This field will be automatically populated when the user selects a particular Payload from the list.				Not NULL.	N/A
Acronym (Payload Acronym)	Payload Data Library (PDL) maintains a valid list of Payloads for user selection. The selection list includes only the payloads the user has Authority to see. This field will be automatically populated when the user selects a Payload from the list.				Not NULL.	N/A
PL/ID (Payload Identifier)	Payload Data Library (PDL) maintains a valid list of Payloads for user selection. The selection list includes only the Payloads the user has Authority to see. This field will be automatically populated when the user selects a Payload from the list.				Not NULL.	N/A
Flight Effectivity	Any CDH user. Payload Data Library (PDL) maintains a valid list of Flights per Payload for user selection. The selection list includes only the Payloads the user has Authority to see. This field will be automatically populated when the user selects Flight Effectivity from the list.				Not NULL. Must be Uppercase.	N/A

TABLE B–1
C&DH COLUMN AND TABLE VALIDATION
SCREEN A–1 COLUMN LEVEL VALIDATION RULES FOR THE PAYLOAD SELECTION AREA (SHEET 1 OF 1)

NOTE: These fields will be the same for screens A–1 through A–2 and selection criteria can be redefined on these screens.

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Development Level	Any CDH user. Payload Data Library (PDL) maintains a valid list of Development Levels per Payload and Flight for user selection. The selection list includes only the Payloads the user has Authority to see. This field will be automatically populated when the user selects a Development Level.				Not NULL. Must comply with PDL SW Verification Plan D683–35485 Appendix C–12.	N/A
Control Level	Payload Data Library (PDL) maintains a valid list of Control Levels per Payload, Flight, and Development Level for user selection. This field will be automatically populated when the user selects a Control Level.					N/A

TABLE LEVEL VALIDATION RULES FOR THE PAYLOAD SELECTION AREA

NOTE These fields will be the same for screens A–1 selection criteria can be redefined on these screens.

No.	Validation Rule
1.	N/A

SCREEN A–2 COLUMN LEVEL VALIDATION RULES FOR THE PAYLOAD SELECTION AREA (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Rack	Any CDH user. Payload Data Library (PDL) maintains a valid list of Racks for user selection. The selection list includes only the Racks the user has Authority to see. This field will be automatically populated when the user selects a particular Rack from the list.				Not NULL.	N/A
Acronym (Payload Acronym)	Payload Data Library (PDL) maintains a valid list of Payloads for user selection. The selection list includes only the payloads the user has Authority to see. This field will be automatically populated when the user selects a Payload from the list.				Not NULL.	N/A
PL/ID (Payload Identifier)	Payload Data Library (PDL) maintains a valid list of Payloads for user selection. The selection list includes only the Payloads the user has Authority to see. This field will be automatically populated when the user selects a Payload from the list.				Not NULL.	N/A
Flight Effectivity	Any CDH user. Payload Data Library (PDL) maintains a valid list of Flights per Payload for user selection. The selection list includes only the Payloads the user has Authority to see. This field will be automatically populated when the user selects Flight Effectivity from the list.				Not NULL. Must be Upper-case.	N/A

SCREEN A–2 COLUMN LEVEL VALIDATION RULES FOR THE PAYLOAD SELECTION AREA (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Development Level	Any CDH user. Payload Data Library (PDL) maintains a valid list of Development Levels per Payload and Flight for user selection. The selection list includes only the Payloads the user has Authority to see. This field will be automatically populated when the user selects a Development Level.				Not NULL. Must comply with PDL SW Verification Plan D683–35485 Appendix C–12.	N/A
Control Level	Payload Data Library (PDL) maintains a valid list of Control Levels per Payload, Flight, and Development Level for user selection. This field will be automatically populated when the user selects a Control Level.					N/A

TABLE LEVEL VALIDATION RULES FOR THE PAYLOAD SELECTION AREA

NOTE These fields will be the same for screens A–2 selection criteria can be redefined on these screens.

No.	Validation Rule
1.	N/A

SCREEN A–3 THROUGH A–38 COLUMN LEVEL VALIDATION RULES FOR THE PAYLOAD SELECTION AREA (SHEET 1 OF 1)

NOTE: These fields will be the same for screens A–3 through A–38 and selection criteria can be redefined on these screens.

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Payload	Any CDH user. Payload Data Library (PDL) maintains a valid list of Payloads for user selection. The selection list includes only the Payloads the user has Authority to see. This field will be automatically populated when the user selects a particular Payload from the list.				Not NULL.	N/A
Acronym (Payload Acronym)	Payload Data Library (PDL) maintains a valid list of Payloads for user selection. The selection list includes only the payloads the user has Authority to see. This field will be automatically populated when the user selects a Payload from the list.				Not NULL.	N/A
Payload Identifier (PL/ID)	Payload Data Library (PDL) maintains a valid list of Payloads for user selection. The selection list includes only the Payloads the user has Authority to see. This field will be automatically populated when the user selects a Payload from the list.				Not NULL.	N/A
Flight Effectivity	Any CDH user. Payload Data Library (PDL) maintains a valid list of Flights per Payload for user selection. The selection list includes only the Payloads the user has Authority to see. This field will be automatically populated when the user selects Flight Effectivity from the list.				Not NULL. Must be Upper-case.	N/A
Development Level	Any CDH user. Payload Data Library (PDL) maintains a valid list of Development Levels per Payload and Flight for user selection. The selection list includes only the Payloads the user has Authority to see. This field will be automatically populated when the user selects a Development Level.				Not NULL. Must comply with PDL SW Verification Plan D683–35485 Appendix C–12.	N/A

SCREEN A–3 THROUGH A–38 COLUMN LEVEL VALIDATION RULES FOR THE PAYLOAD SELECTION AREA (SHEET 1 OF 1)

NOTE: These fields will be the same for screens A–3 through A–38 and selection criteria can be redefined on these screens.

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Control Level	Payload Data Library (PDL) maintains a valid list of Control Levels per Payload, Flight, and Development Level for user selection. This field will be automatically populated when the user selects a Control Level.					N/A
SE/ID (Sub Element ID)	Payload Data Library (PDL) maintains a valid list of Sub Elements per Payload and Flight for user selection. The selection list includes only the Payloads the user has Authority to see. This field will be automatically populated when the user selects a Sub Element.				Not NULL.	N/A

TABLE LEVEL VALIDATION RULES FOR THE PAYLOAD SELECTION AREA

NOTE These fields will be the same for screens A–3 through A–38 and selection criteria can be redefined on these screens.

No.	Validation Rule
1.	N/A

SCREEN A–1 PL DATA COLUMN LEVEL VALIDATION, TAB PL DATA FROM THE MAIN SELECTION FOLDER CDH DATASET OPTIONS

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Payload/Sub Element	PD.				Not NULL. Must comply with MSFC–DOC–1949C VOL. 4, Appendix C. Must be unique per flight. Cannot contain blanks.	Not NULL. Must comply with MSFC–DOC–1949C VOL. 4, Appendix C. Must be unique per flight. Cannot contain blanks.
Title	PD.				Not NULL. Must comply with MSFC–DOC–1949C VOL. 4, Appendix C.	Not NULL. Must comply with MSFC–DOC–1949C VOL. 4, Appendix C.
Element	DSM				Not NULL. Must comply with Appendix D684–10056–01 Rev.K Appendix A.	Not NULL. Must comply with D684–10056–01 Rev.K Appendix A.
Functional System	PSI.			“ Z”	Must comply with Appendix D684–10056–01 REV.K Appendix B.	Not NULL. Must comply with Appendix D684–10056–01 REV.K Appendix B.
Group Assembly	PSI.			NULL.	NULL. If not NULL, Must be Uppercase Alphanumeric characters.	Not NULL. Must be Uppercase Alphanumeric characters.

SCREEN A–1 PL DATA COLUMN LEVEL VALIDATION, TAB PL DATA FROM THE MAIN SELECTION FOLDER CDH DATASET OPTIONS

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Generic Device Code	PSI.			NULL.	NULL. If not NULL, Must comply with Appendix D684–10056–01 Rev. K Appendix D.	Not NULL. Must comply with Appendix D684–10056–01 Rev. K Appendix D.
Subset ID	PSI.	0	65535	NULL.	NULL. 0–65535. Must be unique per flight.	Not NULL. 0–65535. Must be unique per flight.
PL Index	PSIV/IE	0	200	NULL.	NULL. 0–200.	Not NULL. 0–200.
Rack Assignment	DSM. A list of values is provided with Pressurized Payloads.					This field will identify where the sub–element is physically located. (If the payload is Pressurized then the rack_assignment will be set to itself by the application).
LAN–1 Rack–to–Rack Source Address	PD.	00 00 00 00 00 00	FF FF FF FF FF FF	NULL.	NULL. 00 00 00 00 00 00 – FF FF FF FF FF FF. (Uppercase).	NULL. 00 00 00 00 00 00 – FF FF FF FF FF FF. (Uppercase).
LAN–1 Rack–to–Rack Source Buffer Size	PD.	0	99999	NULL.	NULL. 0 – 99999.	NULL. 0 – 99999.
LAN–2 Rack–to–Rack Source Address	PD.	00 00 00 00 00 00	FF FF FF FF FF FF	NULL.	NULL. 00 00 00 00 00 00 – FF FF FF FF FF FF. (Uppercase).	NULL. 00 00 00 00 00 00 – FF FF FF FF FF FF. (Uppercase).

SCREEN A–1 PL DATA COLUMN LEVEL VALIDATION, TAB PL DATA FROM THE MAIN SELECTION FOLDER CDH DATASET OPTIONS

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
LAN–2 Rack–to–Rack Source Buffer Size	PD.	0	99999	NULL.	NULL. 0–99999.	NULL. 0–99999.
LAN–1 Rack–to–Rack Destination Address	PD.	00 00 00 00 00 00	FF FF FF FF FF FF	NULL.	NULL. 00 00 00 00 00 00 – FF FF FF FF FF FF. (Uppercase).	NULL. 00 00 00 00 00 00 – FF FF FF FF FF FF. (Uppercase).
LAN–1 Rack–to–Rack Destination Maximum Acceptable Latency	PD.	1	99999	NULL.	NULL. 1 – 99999.	NULL. 1 – 99999.
LAN–2 Rack–to–Rack Destination Address	PD.	00 00 00 00 00 00	FF FF FF FF FF FF	NULL.	NULL. 00 00 00 00 00 00 – FF FF FF FF FF FF. (Uppercase).	NULL. 00 00 00 00 00 00 – FF FF FF FF FF FF. (Uppercase).
LAN–2 Rack–to–Rack Destination Maximum Acceptable Latency	PD.	1	99999	NULL.	NULL. 1 – 99999.	NULL. 1 – 99999.

TABLE LEVEL VALIDATION RULES FOR SCREEN A–1, TAB PL DATA FROM THE MAIN SELECTION FOLDER CDH DATASET OPTIONS

No.	Validation Rule
1.	For the destination and Source address fields, a space must be between every two characters.

SCREEN A–2 RACK DATA COLUMN LEVEL VALIDATION RULES, TAB RACK DATA, FROM THE MAIN SELECTION FOLDER CDH DATASET OPTIONS (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Rack	Any CDH user. Payload Data Library (PDL) maintains a valid list of Racks for user selection. The selection list includes only the Racks the user has Authority to see. This field will be automatically populated when the user selects a particular Rack from the list.					
LDP (Logical Data Path)	PD.			NULL.	If not NULL. Must comply with D684–10056–01 Rev. K Appendix U. Must be unique per flight.	Must comply with D684–10056–01 Rev. K Appendix U. Must be unique per flight.
Internet Protocol Range	PD.	XXX.XXX.XXX.XXX	XXX (last octect of IP Address)		NULL. 4 groups 1–255 range for each group XXX.XXX.XXX.XXX through XXX.XXX.XXX.XXX	NULL. 4 groups 1–255 range for each group XXX.XXX.XXX.XXX through XXX.XXX.XXX.XXX
Remote Terminal Address	PD	8	28		Not NULL. 8 – 28.	Not NULL. 8 – 28.
Remote Terminal Buffer Size	PD.	0	99999		Not NULL. 0 – 99999.	Not NULL. 0 – 99999.
Remote Terminal Maximum Acceptable Latency	PD.	1	99999	NULL.	NULL. 1 – 99999.	NULL. 1 – 99999.

SCREEN A–2 RACK DATA COLUMN LEVEL VALIDATION RULES, TAB RACK DATA, FROM THE MAIN SELECTION FOLDER CDH DATASET OPTIONS (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
LAN–1 Gateway Destination Address	PD.	00 00 00 00 00 00.	FF FF FF FF FF FF.	NULL.	NULL. 00 00 00 00 00 00 – FF FF FF FF FF FF. (Uppercase).	NULL. 00 00 00 00 00 00 – FF FF FF FF FF FF. (Uppercase).
LAN–1 Gateway Destination Buffer Size	PD.	0	99999	NULL.	NULL. 0 – 99999.	0 – 99999.
LAN–1 Gateway Destination Maximum Acceptable Latency	PD.	1	99999	NULL.	NULL. 1–99999.	NULL. 1–99999.
LAN–2 Gateway Destination Address	PD.	00 00 00 00 00 00	FF FF FF FF FF FF	NULL.	NULL. 00 00 00 00 00 00 – FF FF FF FF FF FF. (Uppercase).	NULL. 00 00 00 00 00 00 – FF FF FF FF FF FF (Uppercase).
LAN–1 Gateway Source Address	PD.	00 00 00 00 00 00	FF FF FF FF FF FF	NULL.	NULL. 00 00 00 00 00 00 – FF FF FF FF FF FF. (Uppercase).	NULL. 00 00 00 00 00 00 – FF FF FF FF FF FF. (Uppercase).
LAN–1 Gateway Source Buffer Size	PD.	0	99999	NULL.	NULL. 0 – 99999.	NULL. 0 – 99999.
LAN–2 Gateway Source Address	PD.	00 00 00 00 00 00	FF FF FF FF FF FF	NULL.	NULL. 00 00 00 00 00 00 – FF FF FF FF FF FF. (Uppercase).	NULL. 00 00 00 00 00 00 – FF FF FF FF FF FF. (Uppercase).
LAN–2 Gateway Source Buffer Size	PD.	0	99999	NULL.	NULL. 0–99999.	NULL. 0–99999.

SCREEN A–2 RACK DATA COLUMN LEVEL VALIDATION RULES, TAB RACK DATA, FROM THE MAIN SELECTION FOLDER CDH DATASET OPTIONS (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
LAN–2 Gateway Destination Buffer Size	PD.	0	99999		Not NULL. 0–99999.	Not NULL. 0–99999.
LAN–2 Gateway Destination Maximum Acceptable Latency	PD.	1	99999	NULL.	NULL. 1–99999.	NULL. 1–99999.

TABLE LEVEL VALIDATION RULES FOR SCREEN A–2, TAB RACK DATA, FROM THE MAIN SELECTION FOLDER CDH DATASET OPTIONS

No.	Validation Rule
1.	For the destination and Source address fields, a space must be between every two characters.

SCREEN A–3 COLUMN LEVEL VALIDATION RULES, TAB PARAM INIT, FROM THE FOLDER TELEMETRY – PARAMETER CORRELATION INITIALIZATION & PARAMETER PROCESSING REQUIREMENTS (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
PCN (Parameter Correlation Number)	PD. This field will be used to correlate the data between tables.				Not NULL. Must be a unique number per Flight, Payload, and Development Level. Position 1 – 3 must be alphanumeric and position 4 – 7 must be numeric. (Uppercase).	Not NULL. Must be a unique number per Flight, Payload, and Development Level. Position 1 – 3 must be Alphanumeric and position 4 – 7 must be numeric. (Uppercase).
Name	PD.				Not NULL. Must be a unique name per Flight, Payload, and Development Level. Must comply with MSFC–DOC–1949, VOL. 4, Appendix C.	Not NULL. Must be a unique name per Flight, Payload, and Development Level. Must comply with MSFC–DOC–1949C, VOL. 4, Appendix C
Description	PD.				Not NULL. Must comply with MSFC–DOC–1949C VOL 4, Appendix C.	Not NULL. Must comply with MSFC–DOC–1949C VOL. 4, Appendix C.
Primitive PUI Seq. Num.	PSI.				NULL. Must be Alphanumeric characters in the 4 positions.	Not NULL. Must be Uppercase Alphanumeric characters in the 4 positions.

SCREEN A–3 COLUMN LEVEL VALIDATION RULES, TAB PARAM INIT, FROM THE FOLDER TELEMETRY – PARAMETER CORRELATION INITIALIZATION & PARAMETER PROCESSING REQUIREMENTS (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Primitive PUI Signal Type	DSM.			"Z"	Not NULL. Must comply with Appendix D684–10056–01 REV.K APPENDIX E – excluding "K" and "G" for Telemetry.	Not NULL. Must comply with Appendix D684–10056–01 REV.K APPENDIX E – excluding "K" and "G".
Health & Status	PD.			"N"	Not NULL. "N" or "Y".	Not NULL. "N" or "Y".
Safety Data	PD.			"N"	Not NULL. "N" or "Y".	Not NULL. "N" or "Y".
Onboard Processing	PD.			"N"	Not NULL. "N" or "Y".	Not NULL. "N" or "Y".
HOSC/POIC Processed Telemetry	PD.			"Y"	Not NULL. "N" or "Y".	Not NULL. "N" or "Y".
Shuttle MPLM	PD.			"N"	Not NULL, "N" or "Y".	Not NULL, "N" or "Y".

TABLE LEVEL VALIDATION RULES FOR SCREEN A–3, TAB PARAM INIT, FROM THE FOLDER TELEMETRY – PARAMETER CORRELATION INITIALIZATION & PARAMETER PROCESSING REQUIREMENTS

NOTE: Using CDH Table Telemetry Parameter Initialization. This is a Child Table of the Payload Sub Element Requirements Definition Table; can have one or more Parameters (PUIs) per Sub Element.

No.	Validation Rules
1.	If the Health & Status Flag value is "Y", then the HOSC/POIC Flag value must be "Y".
2.	If the Safety Data Flag value is "Y", then the Heath & Status Flag must be "Y".
3.	If the Health & Status value is "Y", then the Proprietary value must be "N" (Screen A–5).
4.	Parameter Correlation Number must be in sequential order for the first three characters. Each new set must start with 0001 in the last four positions.
5.	If the Onboard Flag value is "Y", then the Heath & Status Flag must be "Y".
6.	If Health and Status Flag = 'Y', then the Timeliner Flag must be 'Y'.
7.	If Onboard Flag value is "Y", then Data Type must be NULL or FEEE, ITWO, ITWOW, IUNS, UMAG, IDIS, IBCD, SASC, and SASCB.
8.	Primitive PUI must be unique per flight and development level for each measurement (PCU).

SCREEN A–4 COLUMN LEVEL VALIDATION RULES FOR, TAB PARAM DEF, FROM THE FOLDER TELEMETRY – PARAMETER CORRELATION INITIALIZATION & PROCESSING REQUIREMENTS (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Cal (Calibration) Type	PD.			"N"	Not NULL. "N", "PC", PP", or "SC".	Not NULL. "N", "PC", PP", or "SC".
Data Type	PD.				Not NULL. Must comply with Appendix MSFC–STD–1274B, VOL.2 APPENDIX B.	Not NULL. Must comply with Appendix MSFC–STD–1274B, VOL.2 APPENDIX B.
Total Length	PD				Not NULL. Must comply with Appendix *PDL SW VERIFICATION PLAN D683–35485 APPENDIX C–13*.	Not NULL. Must comply with Appendix *PDL SW VERIFICATION PLAN D683–35485 APPENDIX C–13*.
Engineering Units	PD.				If not NULL. Must comply with Appendix *MSFC–DOC–1949C VOL.5 APPENDIX D*.	If not NULL. Must comply with Appendix *MSFC–DOC–1949C VOL.5 APPENDIX D*.

SCREEN A–4 COLUMN LEVEL VALIDATION RULES FOR, TAB PARAM DEF, FROM THE FOLDER TELEMETRY – PARAMETER CORRELATION INITIALIZATION & PROCESSING REQUIREMENTS (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Low Raw Counts	PD.	Must comply with Appendix *PDL SW VERIFICATION PLAN D683–35485 APPENDIX C–13*.	Must comply with Appendix *PDL SW VERIFICATION PLAN D683–35485 APPENDIX C–13*.	NULL.	If Not NULL, must comply with Appendix *PDL SW VERIFICATION PLAN D683–35485 APPENDIX C–13*.	If Not NULL, must comply with Appendix *PDL SW VERIFICATION PLAN D683–35485 APPENDIX C–13*.
High Raw Counts	PD.	Must comply with Appendix *PDL SW VERIFICATION PLAN D683–35485 APPENDIX C–13*.	Must comply with Appendix *PDL SW VERIFICATION PLAN D683–35485 APPENDIX C–13*.	NULL.	If Not NULL, must comply with Appendix *PDL SW VERIFICATION PLAN D683–35485 APPENDIX C–13*.	If Not NULL, must comply with Appendix *PDL SW VERIFICATION PLAN D683–35485 APPENDIX C–13*.

TABLE LEVEL VALIDATION RULES FOR SCREEN A–4, TAB PARAM DEF, FROM THE FOLDER TELEMETRY – PARAMETER CORRELATION INITIALIZATION & PROCESSING REQUIREMENTS (SHEET 1 OF 1)

NOTE: Using CDH Table Telemetry Parameter Correlation Initialization & Parameter Processing Requirements – (tlm_signal_pui). This is a Child Table of the Payload Sub Element Requirements Definition Table; can have one or more Parameters (PUIs) per Sub Element.

No.	Validation Rules
1.	If the Calibration Type value is “SC”, then the Data Type must be “IDIS”.
2.	If the Calibration Type value is “PC”, then the Data Type must be one “IMAG”, “IUNS”, “IUNSB”, “IUNSW”, “IUNSX,”, “ITWO”, “ITWOW”, “ITWOB”, “ITWOX”, “IBCD”, “IDSI”, “FEEE”, “FIBM”, “FMIL”, “FNTL”, “FSPL”, or “FVAX”.
3.	If the Calibration Type value is “PP”, then the Data Type must be one of the following: “IMAG”, “IUNS”, “IUNSB”, “IUNSW”, “IUNSX”, “ITWO”, “ITWOW”, “ITWOB”, “ITWOX”, “IBCD”, or “IDSI”.
4.	If the Calibration Type value is “N”, then the Data Type can be any of the Data Types in Appendix MSFC–STD–1274B, VOL.2 APPENDIX B, except for IDIS.
5.	If Data Type value is “IUND”, then the Calibration Type must be “N”.
6.	If the Data Type is “IDIS”, “IMAG”, “IUNS”, “IUNSB”, “IUNSW”, “IUNSX”, “ITWO”, “ITWOW”, “ITWOB”, “ITWOX”, “IBCD”, or “IDSI”, then the Low Raw Counts and High Raw Counts values must not be NULL.
7.	If the Low Raw Count value is NULL, then the High Raw Count value must be NULL.
8.	If the High Raw Count value is NULL, then the Low Raw Count value must be NULL.
9	For Parameter Correlation Number (PCN), Calibration Type and Data Type must comply with Appendix MSFC–DOC–1949C, VOL.4 TABLE 4.2.12–1.
10.	The Low Raw Count value must be less than the High Raw Count value.
11.	If the Calibration Switch Flag (screen A–5) is checked, then the Calibration Type must be “PC”, “PP”, or “SC”.
12.	If the Data Type is “IDIS”, then the Limit Switched Primitive PUI value and the Limit Default Set Number (screen A–10) must be NULL.
13.	If the Data Type value is “IMAG”, “IUNS”, “ITWO”, “ITWOW”, “IBCD”, “IDSI”, “FEEE”, “FIBM”, “FMIL”, “FNTL”, “FSPL”, or “FVAX”, then the Expected State Switched Primitive PUI value and the Expected State Default Set Number (screen A–9) must be NULL.
14.	If the Data Type value is “IUNS” or “IDIS”, then the Low Raw Count value must be greater than or equal zero.
15.	If the Data Type is “IDIS”, then the Calibration Type value must be “SC”.
16.	If the Limit Default Set Number value (screen A–10) or the Limit Switched Primitive PUI value (screen A–10) is not NULL, then the Data Type value cannot be “IDIS”.
17.	If the Expected State Default Set Number value (screen A–9) or the Expected State Switched Primitive PUI value (screen A–9) is not NULL, then the Data Type value must be “IDIS”.
18.	If the Data Type value must be “IDIS”, the Low Raw Counts and High Raw Counts values must be greater than or equal to zero and less than or equal to one less than the value of 2 raised to the power of the Total Length value. Reference Appendix *PDL SW VERIFICATION PLAN D683–35485 APPENDIX C–13*.
19.	If the Data Type value is “IMAG”, “ITWO”, “ITWOW”, or “IDSI”, then the Low Raw Count value must comply with Appendix *PDL SW VERIFICATION PLAN D683–35485 APPENDIX C–13*.

TABLE LEVEL VALIDATION RULES FOR SCREEN A–4, TAB PARAM DEF, FROM THE FOLDER TELEMETRY – PARAMETER CORRELATION INITIALIZATION & PROCESSING REQUIREMENTS
(SHEET 1 OF 1)

20.	If the Data Type value is “IBCD”, then the Low Raw Count value must be between 0 and 9999. Reference Appendix *PDL SW VERIFICATION PLAN D683–35485 APPENDIX C–13*.
21.	If the Data Type value is “IBCD”, then the High Raw Count value must be between 0 and 9999. Reference Appendix *PDL SW VERIFICATION PLAN D683–35485 APPENDIX C–13*.
22.	If the Data Type value is “IMAG”, “ITWO”, “ITWOW”, or “IDSI”, then the High Raw Count value must comply with Appendix *PDL SW VERIFICATION PLAN D683–35485 APPENDIX C–13*.
23.	If the Data Type value is “IDIS”, “IUNSB”, “IUNSW”, “IUNSX”, or “IUNS” and the Total Length is 32, then the Low Raw Count value must be greater than 0 and less than 4294967295. Reference Appendix *PDL SW VERIFICATION PLAN D683–35485 APPENDIX C–13*. (Screen A–20).
24.	If the Data Type value is “IDIS”, “IUNSB”, “IUNSW”, “IUNSX”, or “IUNS” and the Total Length value is 32, then the High Raw Count value must be greater than 0 and less than 4294967295. Reference Appendix *PDL SW VERIFICATION PLAN D683–35485 APPENDIX C–13*. (Screen A–20).
25.	If the Data Type value is “SASC”, “SEBC”, “SASCB”, “SUND”, “SEXP”, or “TISS”, then the Calibration Type value must be “N”.
26.	“SEXP” Data Type can only be used with an EXPRESS rack payload.

SCREEN A–5 COLUMN LEVEL VALIDATION RULES, TAB GROUND PROC, FROM THE FOLDER TELEMETRY – PARAMETER CORRELATION INITIALIZATION & PARAMETER PROCESSING REQUIREMENTS (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Column Name	Type of User Responsible For Entering Data	Minimum Value	Maximum Value	Default Values	Valid Values	Valid values before Promoting to Interim Level
Proprietary	PD.			"N"	Not NULL. "N" or "Y".	Not NULL. "N" or "Y".
Calibration Switch	PD.			"N"	Not NULL. "N" or "Y".	Not NULL. "N" or "Y".
Expected State	PD.			"N"	Not NULL. "N" or "Y".	Not NULL. "N" or "Y".
Limit Sense	PD.			"N"	Not NULL. "N" or "Y".	Not NULL. "N" or "Y".
LES Switch	PD.			"N"	Not NULL. "N" or "Y".	Not NULL. "N" or "Y".
Counter Parameter	PD.			"N"	Not NULL. "N" or "Y".	Not NULL. "N" or "Y".
Range Parameter	PD.			"N"	Not NULL. "N" or "Y".	Not NULL. "N" or "Y".

TABLE LEVEL VALIDATION RULES FOR SCREEN A–5, TAB GROUND PROC, FROM THE FOLDER TELEMETRY – PARAMETER CORRELATION INITIALIZATION & PARAMETER PROCESSING REQUIREMENTS

NOTE: Using CDH Table Telemetry Parameter Correlation Initialization & Parameter Processing Requirements – (tlm_signal_pui). This is a Child Table of the Payload Sub Element Requirements Definition Table; can have one or more Parameters (PUIs) per Sub Element.

No.	Validation Rules
1.	If the Calibration Switch value is “Y”, then the Calibration Type must be “PC”, “PP”, or “SC”.
2.	If the Limit Sense value is “Y”, then the Expected State value must be “N”.
3.	If the Expected State value is “Y”, then the Limit Sense value must be “N”.
4.	If the LES Switch is “Y”, then (the Expected State value must be “Y” and the Limit Sense value must be “N”) or (the Limit Sense value must be “Y” and the Expected State value must be “N”).
5.	If the Data Type value is “SASC”, “SEBC”, “SASCB”, “SUND”, “SEXP”, or “TISS”, and the Calibration Type value equal “N”, then the values for Calibration Switch, Expected State, Limit Sense, and LES Switch must be “N”.
6.	If the Data Type is “IDIS”, then the Limit Sense value is “N”; the Limit Switched Primitive PUI value; and the Limit Default Set Number (screen A–10) must be NULL.
7.	If the Health & Status (screen A–3) value is “Y”, then the Proprietary value must be “N”.
8.	If the Counter Parameter value is “Y”, then the Range Parameter value must be “N”.
9.	If the Range Parameter value is “Y”, then the Counter Parameter value must be “N”.
10.	Only allow the Counter Parameter Flag to be “Y”, if the Data Types is “IBCD”, “IDSI”, “IMAG”, “IUNS”, “ITWO”, or “ITWOW”.

SCREENS A–6, A–7, AND A–8 COLUMN LEVEL VALIDATION RULES, TAB POINT PAIRS, POLYNOMIALS OR STATE CODES FROM THE FOLDER TELEMETRY – CAL/LES DEFINITIONS (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Cal SW (Switch) PCN (Parameter Correlation Number)	PD.					
Low Range	PD.			NULL.		
High Range	PD.			NULL.		
State Code	PD.			NULL.	If not NULL, then must exist in the State Code Table.	If not NULL, then must exist in the State Code Table.

TABLE LEVEL VALIDATION RULES FOR SCREENS A–6, A–7, AND A–8, TAB POINT PAIRS, POLYNOMIALS OR STATE CODES FROM THE FOLDER TELEMETRY – CAL/LES DEFINITIONS

NOTE: Using CDH Table Telemetry Measurement calibration Switching (tlm_meas_cal_sw). This is a Child Table of the Telemetry Parameter Initialization & Parameter Processing Requirements table – (tlm_signal_pui). A Parameter Correlation Number (PCN) can have only one Calibration Switching record.

No.	Validation Rules
1.	If the State Code value is not NULL, then the Low Range Value and the High Range value must be NULL.
2.	If the State Code value is NULL, then the Low Range Value and the High Range value cannot be NULL. The High Range value must be greater than the Low Range value.
3.	If the Low Range and High Range values are not NULL, then the High Range value must be greater than the Low Range value.
4.	If the Low Range value is not NULL, then the High Range value cannot be NULL.
5.	If the High Range value is not NULL, then the Low Range value cannot be NULL.
6.	If the Calibration Switch Flag value is “Y” (screen A–5), then PCN must exist for that Flight, Development Level, Sub Element, and Parameter Correlation Number (PCN).
7.	The Calibration Type value must be “PC”, “PP”, or “SC” (screen A–4).
8.	If the Calibration Switched Primitive PUI is not NULL, then the Calibration Default Set Number must not be NULL (screens A–6, A–7, or A–8).
9.	If the Data Type for Calibration Switch Primitive PUI is “IMAG”, “IUNS”, “IUNSB”, “IUNSW”, “IUNSX”, “ITWO”, “ITWOW”, “ITWOB”, “ITWOX”, “IBCD”, “IDSI”, “FEEE”, “FIBM”, “FMIL”, “FNTL”, “FSPL”, or “FVAX”, then the Low Range and High Range values in the Calibration Switch table must not be NULL.
10.	If the Calibration Switch Primitive PUI is “IDIS”, then the STATE_CODE value in the Calibration Switch table must not be NULL.
11.	For the Low and the High Range, the total character length including the decimal can not be greater than 16 characters. If all integers, then the decimal is not counted.

FOR SCREEN A–6 COLUMN LEVEL VALIDATION RULES, TAB POINT PAIRS, FROM THE FOLDER TELEMETRY – CAL/LES DEFINITIONS (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Cal Default Set Number	PD.	1	32	1	Not NULL. 1 – 32.	Not NULL. 1 – 32.
Set Number	PD	1	32	1	Not NULL. 1 – 32.	Not NULL. 1 – 32.
Sequence Number	PD	1	21	1	Not NULL. 1 – 21.	Not NULL. 1 – 21.
Pair Count	PD.	Low Raw Value on A–4.	High Raw Value on A–4.		Not NULL. Must be between Low Raw Value and High Raw value on A–4.	Not NULL. Must be between Low Raw Value and High Raw value on A–4.
Pair Value	PD.				Not NULL.	Not NULL.

TABLE LEVEL VALIDATION RULES FOR SCREEN A–6, TAB POINT PAIRS, FROM THE FOLDER TELEMETRY – CAL/LES DEFINITIONS

NOTE: Using CDH Table Telemetry Measurement Point Pairs (PP) (tlm_meas_pp). This is a Child Table of the Telemetry Parameter Initialization & Parameter Processing Requirements table – (tlm_signal_pui). A Parameter Correlation Number (PCN) can have two or more point pair records.

No.	Validation Rules
1.	If the Calibration Switch Flag (screen A–5) value is " N", then the Default Set Number and the Set Number values must be equal to 1.
2.	For a Point Pair Set Number value, the Pair Count value must not be equal to another Pair Count value.
3.	For a Point Pair Set Number value, the minimum number of point pairs is 2.
4.	For a Point Pair Set Number value, the maximum number of point pairs is 21.
5.	For Point Pair Sequence Number values, the values must be sequential beginning with 1.
6.	For a Point Pair Set Number values, the values must be sequential beginning with 1.
7.	If the Calibration Switch Flag (screen A–5) value is "Y", then the Calibration Type must be "PC", "PP", or "SC".
8.	If the Calibration Switch Flag (screen A–5) value is "Y", then the Calibration Default Set Number must not be NULL.
9.	If the Calibration Type value is "PC", "PP", or "SC", then the Calibrated Default Set Number value cannot be NULL.
10.	If the Calibration Type is "N", then the Default Set Number value must be NULL.
11.	For the Pair Value field, the total character length including the decimal can not be greater than 16 characters. If all integers, then the decimal is not counted.
12.	For a PCN value in the tlm_meas_pp table, the pair_count values must be greater than or equal to the low_raw and less than or equal the high_raw values of the tlm_signal_pui table.
13.	The calibration default set number cannot be greater than the maximum set number.

FOR SCREEN A–7 COLUMN LEVEL VALIDATION RULES, TAB POLYNOMIALS, FROM THE FOLDER TELEMETRY – CAL/LES DEFINITIONS (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Def (Default) Set Number	PD.	1	32	1	Not NULL. 1 – 32.	Not NULL. 1 – 32.
Set Number	PD	1	32	1	Not NULL. 1 – 32.	Not NULL. 1 – 32.
Degree	PD.	1	9	1	Not NULL. 1 – 9.	Not NULL. 1 – 9.
Low Range	PD.				Not NULL.	Not NULL.
High Range	PD.				Not NULL.	Not NULL.
Coefficient A0	PD.				Not NULL. Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*	Not NULL. Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*
Coefficient A1	PD.				Not NULL. Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*	Not NULL. Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*
Coefficient A2	PD.				If Not NULL then, Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*	If Not NULL then, Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*

FOR SCREEN A–7 COLUMN LEVEL VALIDATION RULES, TAB POLYNOMIALS, FROM THE FOLDER TELEMETRY – CAL/LES DEFINITIONS (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Coefficient A3	PD.				If Not NULL then, Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*	If Not NULL then, Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*
Coefficient A4	PD.				If Not NULL then, Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*	If Not NULL then, Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*
Coefficient A5	PD.				If Not NULL then, Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*	If Not NULL then, Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*
Coefficient A6	PD.				If Not NULL then, Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*	If Not NULL then, Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*

FOR SCREEN A–7 COLUMN LEVEL VALIDATION RULES, TAB POLYNOMIALS, FROM THE FOLDER TELEMETRY – CAL/LES DEFINITIONS (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Coefficient A7	PD.				If Not NULL then, Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*	If Not NULL then, Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*
Coefficient A8	PD.				If Not NULL then, Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*	If Not NULL then, Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*
Coefficient A9	PD.				If Not NULL then, Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*	If Not NULL then, Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*

TABLE LEVEL VALIDATION RULES FOR SCREEN A–7, TAB POLYNOMIALS, FROM THE FOLDER TELEMETRY – CAL/LES DEFINITIONS

NOTE: Using CDH Table Telemetry Measurement Polynomial Coefficient (PC) (tlm_meas_pc). This is a Child Table of the Telemetry Parameter Initialization & Parameter Processing Requirements table – (tlm_signal_pui). A Parameter Correlation Number (PCN) can have two or more Polynomial Coefficient records

No.	Validation Rules
1.	Degree must be equal to the number of not NULL coefficient values minus one.
2.	The High Range value must be greater than the Low Range value.
3.	For a Polynomial Coefficient Set Number values, the values must be sequential beginning with 1.
4.	If the Calibration Switch Flag value (screen A–5) is “Y”, then the Calibration Type must be “PC”, “PP”, or “SC”.
5.	For a Polynomial Coefficient Set Number value, the minimum number of coefficient is 2.
6.	For a Polynomial Coefficient Set Number value, the maximum number of coefficients is 9.
7.	If the Calibration Switch Flag value is “Y”, then the Calibration Default Set Number must not be NULL.
8.	If the Calibration Type value is “PC”, “PP”, or “SC”, then the Calibrated Default Set Number value cannot be NULL.
9.	If the Calibration Type value is “N”, then the Calibration Default Set Number value must be NULL.
10.	If the Calibration Switch Flag (screen A–5) value is “N”, then the values for the Set Number and the Calibration Default Set Number must be equal to 1.
11.	For the Low and the High Range, the total character length including the decimal can not be greater than 16 characters. If all integers, then the decimal is not counted.

SCREEN A–8 COLUMN LEVEL VALIDATION RULES, TAB STATE CODES, FROM THE FOLDER TELEMETRY – CAL/LES DEFINITIONS (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Default Set Number	PD.	1	32	1	Not NULL. 1 – 32.	Not NULL. 1 – 32.
Set Number	PD	1	32	1	Not NULL. 1 – 32.	Not NULL. 1 – 32.
Sequence Number	PD	1	99	1	Not NULL. 1 – 99.	Not NULL. 1 – 99.
Low Count	PD.	Low Raw Value on A–4.	High Raw Value on A–4.		Not NULL. Must be between Low Raw Value and High Raw value on A–4.	Not NULL. Must be between Low Raw Value and High Raw value on A–4.
High Count	PD.	Low Raw Value on A–4.	High Raw Value on A–4.		Not NULL. Must be between Low Count value on screen A–8 and High Raw value on A–4.	Not NULL. Must be between Low count value on screen A–8 and High Raw value on A–4.
State Code	PD.			“ ” Character blank	Not NULL. Must comply with MSFC–DOC–1949C VOL. 4, Appendix C.	Not NULL. Must comply with MSFC–DOC–1949C VOL. 4, Appendix C.
Expected State Flag	PD.			“N”	Not NULL. “N” or “Y”.	Not NULL. “N” or “Y”.

TABLE LEVEL VALIDATION RULES FOR SCREEN A–8, TAB STATE CODES, FROM THE FOLDER TELEMETRY – CAL/LES DEFINITIONS

NOTE: Using CDH Table Telemetry Measurement State Code (SC) (tlm_meas_sc). This is a Child Table of the Telemetry Parameter Initialization & Parameter Processing Requirements table – (tlm_signal_pui). A Parameter Correlation Number (PCN) can have two or more State Code records.

No.	Validation Rules
1.	The Low Count value must be less than or equal to High Count value.
2.	The High Count value must be greater than or equal to the Low Count value.
3.	If the Calibration Switch Flag (screen A–5) value is “N”, then the values for the Set Number and the Default Set Number must be equal to 1.
4.	For a Parameter Correlation Number (PCN) and a Set Number, there must be at least two entries per Set Number and the State Codes cannot be equal.
5.	For a Parameter Correlation Number and a Set Number value, only one State Code value may be “ “ (Character blank).
6.	For State Code Sequence Number values, the values must be sequential beginning with 1.
7.	For a State Code Set Number values, the values must be sequential beginning with 1.
8.	If the Calibration Switch Flag (screen A–5) value is “Y”, then the Calibration Type must be “PC”, “PP”, or “SC”.
9.	If the Calibration Switch Flag (screen A–5) value is “Y”, then the Default Set Number must not be NULL.
10.	If the Calibration Type value is “PC”, “PP”, or “SC”, then the Calibrated Default Set Number value cannot be NULL.
11.	If the Calibration Type is “N”, then the Calibration Default Set Number value must be NULL.
12.	If the Data Type is “IDIS”, then the Calibration Type value must be “SC”.
13.	For a PCN and State Code Calibration Set Number value, the maximum number of state codes is 99.
14.	For the Low and High Count fields, the total character length including the decimal can not be greater than 16 characters. If all integers, then the decimal is not counted.
15.	For a PCN value in the tlm_meas_sc table the low_count and high_count values must be less than or equal to the low_raw and high_raw values of the tlm_signal_pui table.
16.	Only one Expected State Flag can be checked per Set Number.

SCREEN A–8 COLUMN LEVEL VALIDATION RULES, TAB STATE CODES, FROM THE FOLDER TELEMETRY – CAL/LES DEFINITIONS (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
ES (Expected State) Switch PCN (Parameter Correlation Number)	PD.					
Low Range	PD.			NULL.		
High Range	PD.			NULL.		
State Code	PD.			NULL.	If Not NULL, then must exist in the State Code Table for the Expected State Switch PCN.	If Not NULL, then must exist in the State Code Table for the Expected State Switch PCN.

TABLE LEVEL VALIDATION RULES FOR SCREEN A–9, TAB EXPECTED STATES, FROM THE FOLDER TELEMETRY – ES SWITCHING CAL/LES DEFINITIONS

NOTE: Using table Telemetry Measurement Expected State Switching (tlm_meas_es_sw. This is a Child Table of the Telemetry Measurement Expected States table – (tlm_meas_exp_states). An Expected State Parameter Correlation Number (PCN) can have only one switching record.

No.	Validation Rules
1.	If the Low Range value or High Range value is not NULL, then the State Code value must be NULL.
2.	If the State Code value is not NULL, then the Low Range and High Range values must be NULL.
3.	If the Low Range value is not NULL, then the High Range value must not be NULL.
4.	If the High Range value is not NULL, then the Low Range value must not be NULL.
5.	If the Low Range and High Range values are not NULL, the High Range value must be greater than the Low Range value.
6.	If the ES Switch PCN value is not NULL, then the Limit Switch PCN must be NULL.
7.	If the Limit Switch PCN is not NULL, then the ES Switch PCN value must be NULL.
8.	For the Low and the High Range, the total character length including the decimal cannot be greater than 16 characters. If all integers, then the decimal is not counted.
9.	For a PCN value in the tlm_signal_pui table, if the exp_state_sw_pui_id value in the tlm_signal_pui table is not NULL and the data_type (screen A–4) value for the exp_state_sw_pui_id value in the tlm_signal_pui table is 'IMAG', 'IUNS', 'ITWO', 'ITWOW', 'IBCD', 'IDSI', 'FEEE', 'FIBM', 'FMIL', 'FNTL', 'FSPL', or 'FVAX', then the low_range and high_range values in the tlm_meas_es_sw table must not be NULL for the PCN value in the tlm_signal_pui table.

SCREEN A–9 COLUMN LEVEL VALIDATION RULES, TAB EXPECTED STATES, FROM THE FOLDER TELEMETRY – CAL/LES DEFINITIONS (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Exception Monitored Message Description	PD.				NULL.	NULL.
Default Set Number	PD.	1	32	1	Not NULL. 1 – 32.	Not NULL. 1 – 32.
Set Number	PD	1	32	1	Not NULL. 1 – 32.	Not NULL. 1 – 32.
Expected State	PD.			" " Character blank.	Not NULL. Must comply with MSFC–DOC–1949C Vol. 4, Appendix C.	Not NULL. Must comply with MSFC–DOC–1949C Vol. 4, Appendix C.
Samples Used	PD.			"N"	Not NULL. "A", "F", or "N".	Not NULL. "A", "F", or "N".
Number of Violations	PD.	1	99	NULL.	NULL. 1 – 99.	NULL. 1 – 99.

TABLE LEVEL VALIDATION RULES FOR SCREEN A–9, TAB EXPECTED STATES, FROM THE FOLDER TELEMETRY – CAL/LES DEFINITIONS

NOTE: Using CDH Table Telemetry Measurement Expected States (ES) (tlm_meas_exp_states). This is a Child Table of the Telemetry Parameter Initialization & Processing Requirements table – (tlm_signal_pui). A Parameter Correlation Number (PCN) can have one or more Expected State records.

No.	Validation Rules
1.	For a Set Number values, the values must be sequential, beginning with 1.
2.	For a Parameter Correlation Number (PCN), the Expected State value must be a valid State code (screen A–8).
3.	If the LES Switch value is "Y", then (the Expected State value must be "Y" and the Limit Sense value must be "N") or (the Limit Sense value must be "Y" and the Expected State value must be "N".
4.	If the Expected State Default Set Number value or the Expected State Switch Primitive PUI value is not NULL, then the Data Type value must be "IDIS".

SCREEN A–10 COLUMN LEVEL VALIDATION RULES, TAB LIMIT SENSING, FROM THE FOLDER TELEMETRY – CAL/LES DEFINITIONS (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Limit Switch PCN (Parameter Correlation Number)	PD.				Not NULL.	Not NULL.
Low Range	PD.			NULL.		
High Range	PD.			NULL.		
State Code	PD.			NULL.	If not NULL, then must exist in the State Code Table for the Limit Switch PCN.	If not NULL, then must exist in the State Code Table for the Limit Switch PCN.

TABLE LEVEL VALIDATION RULES FOR SCREEN A–10, TAB LIMIT SENSING, FROM THE FOLDER TELEMETRY – CAL/LES DEFINITIONS

NOTE: Using CDH Table Telemetry Measurement Limit Switching (tlm_meas_limit_sw). This is a Child Table of the Telemetry Measurement Limit Sensing – (tlm_meas_limits). A Limit Sensing Parameter Correlation Number (PCN) can have only one switching record.

No.	Validation Rules
1.	If the State Code value is not NULL, then the Low Range value and High Range value must be NULL.
2.	If the State Code is NULL, then the Low Range value and High Range value cannot be NULL.
3.	If the Low Range value and High Range value is not NULL, then the High Range value must be greater than the Low Range value.
4.	If the Low Range value is not NULL, then the High Range value cannot be NULL.
5.	If the High Range value is not NULL, then the Low Range value cannot be NULL.
6.	If the Limit Switch PCN value is not NULL, then the ES Switch PCN value must be NULL.
7.	If the ES Switch PCN value is not NULL, then the Limit Switch PCN must be NULL.
8.	For the Low and the High Range, the total character length including the decimal can not be greater than 16 characters. If all integers, then the decimal is not counted.

SCREEN A–10 COLUMN LEVEL VALIDATION RULES, TAB LIMIT SENSING, FROM THE FOLDER TELEMETRY – CAL/LES DEFINITIONS (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Column Name	Type of User Responsible For Entering Data	Minimum Value	Maximum Value	Default Values	Valid Values	Valid values before Promoting to Interim Level
Exception Monitored Message Description	PD.			NULL.	NULL.	NULL.
Default Set Number	PD.	1	32	1	Not NULL. 1 – 32.	Not NULL. 1 – 32.
Set Number	PD	1	32	1	Not NULL. 1 – 32.	Not NULL. 1 – 32.
Low Warning	PD.			NULL.		
Low Caution	PD.			NULL.		
High Caution	PD.			NULL.		
High Warning	PD.			NULL.		
Delta	PD.			NULL.		
Samples Used	PD.			“N”	Not NULL. “A”, “F”, or “N”.	Not NULL. “A”, “F”, or “N”.
Number of Violations	PD.	1	99	NULL.	NULL. 1 – 99.	NULL. 1 – 99.

TABLE LEVEL VALIDATION RULES FOR SCREEN A–10, TAB LIMIT SENSING, FROM THE FOLDER TELEMETRY – CAL/LES DEFINITIONS

NOTE: Using CDH Table Telemetry Measurement Limit Sensing (tlm_meas_limits). This is a Child Table of the Telemetry Parameter Initialization & Parameter Processing Requirements table – (tlm_signal_pui). A Parameter Correlation Number (PCN) can have one or more Limit Sensing records.

No.	Validation Rules
1.	The Low Caution value or High Caution value or the Low Warning or the High Warning value must not be NULL.
2.	For each Limit Set Number, the Low Warning value must be less than the Low Caution, High Caution and High Warning values, the Low Caution value must be less than the High Caution and High Warning values, and the High Caution must be less than the High Warning value.
3.	For a Limit Set Number values, the values must be sequential beginning with 1.
4.	If the Data Type is “IDIS” (Screen A–4), then the Limit Switch value must be “N” and the limit Default Set Number must be NULL.
5.	If the Limit Default Set Number value or the Limit Switched Primitive PUI value is not NULL, then the Data Type value cannot be “IDIS”.
6.	If the LES Switch is “Y”, then (the Expected State value must be “Y” and the Limit Sense value must be “N”) or (the Limit Sense value must be “Y” and the Expected State value must be “N”.
7.	For the Low and the High Caution and Low and High Warning fields, the total character length including the decimal can not be greater than 16 characters. If all integers, then the decimal is not counted.
8.	If a Delta value exists, then the Sample Used value must be “A”.

SCREEN A–11 COLUMN LEVEL VALIDATION RULES, TAB ONBOARD PROC, FROM THE FOLDER ONBOARD – PARAMETER PROCESSING REQUIREMENTS (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Payload MDM Limit Check	PD.			"N"	Not NULL. "N" or "Y".	Not NULL. "N" or "Y".
Timeliner	PD.			"Y"	Not NULL. "N" or "Y".	Not NULL. "N" or "Y".
PCS Limit Check	PD.			"N"	Not NULL. "N" or "Y".	Not NULL. "N" or "Y".
Onboard Data Type	PD.			NULL.	Not NULL.	Not NULL.
Ancillary Data	PD.			"N"	Not NULL. "N" or "Y".	Not NULL. "N" or "Y".
Word PUI Positions 1–8	DSM.				Not NULL. Must be upper case. Positions 1 and 3 must be alpha. Position 2 must be alphanumeric. Position 4 must be alpha. Positions 5 and 6 must be numeric. Positions 7–8 must be alpha.	Not NULL. Must be upper case. Positions 1 and 3 must be alpha. Position 2 must be alphanumeric. Position 4 must be alpha. Positions 5 and 6 must be numeric. Positions 7–8 must be alpha.
Word PUI Positions 9–12	DSM.				Not NULL. Must be upper case alphanumeric characters in the 4 positions.	Not NULL. Must be upper case alphanumeric characters in the 4 positions.
Word PUI Position 13	DSM.				The thirteen position must be "L".	The thirteen position must be "L".

TABLE LEVEL VALIDATION RULES FOR SCREEN A–11, TAB ONBOARD PROC, FROM THE FOLDER ONBOARD – PARAMETER PROCESSING REQUIREMENTS

NOTE: Using CDH Table Telemetry Parameter Correlation Initialization & Parameter Processing Requirements – (tlm_signal_pui). This is a Child Table of the Payload Sub Element Requirements Definition Table; can have one or more Parameters (PUIs) per Sub Element.

No.	Validation Rules		
1.	Data Type conversion:		
	Telemetry Data Type	Onboard Data Type	Onboard Data Type Description
	FEEE	F	Floating Point
	IBCD	BCD	Binary Coded Decimal
	IDIS	E	Enumerated
	IMAG	SMI	Signed Magnitude Integer
	ITWO	SI	Signed Integer
	ITWOW	SI	Signed Integer
	IUNS	UI	Unsigned Integer
	SASC	NC	Character Non–Intel
	SASCB	C	Character–Intel

SCREEN A–12 COLUMN LEVEL VALIDATION RULES FOR, TAB PLMDM, FROM THE FOLDER Onboard – Parameter Processing Requirements (Sheet 1 of 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Method (Error)	PD.				Not NULL. “E”, “N”, “U”, or “L”.	Not NULL. “E”, “N”, “U”, or “L”.
Annunciation (Error Type)	PD.				Not NULL. “C”, “W”, or “N”.	Not NULL. “C”, “W”, or “N”.
Value	PD.					
Trip Count	PD.	0	60		Not NULL. 0 – 60.	Not NULL. 0 – 60.
Command CN (for the CMD to be sent) (CCN)	PD.					

TABLE LEVEL VALIDATION RULES FOR SCREEN A–12, TAB PLMDM, FROM THE FOLDER ONBOARD – PARAMETER PROCESSING REQUIREMENTS

NOTE: Using CDH Table Onboard PLMDM Limit Check Definition –(ob_plmdm_lim_chk_def). This is a Child Table of the Payload Sub Element Requirements Definition Table; can have one or more Parameters (PUIs) per Sub Element.

No.	Validation Rules
1.	Command Correlation Number must exist in the cmd_signal_pui table. (Screen A–24).
2.	The field Value is determined by the Data type.

SCREEN A–13 COLUMN LEVEL VALIDATION RULES, TAB PCS, FROM THE FOLDER ONBOARD – PARAMETER PROCESSING REQUIREMENTS – PCS DEFINITIONS (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Onboard Cal Type	PD.				Not NULL. "PC" or "LC".	Not NULL. "PC" or "LC".
PCS Engineering Units	PD.				Not NULL. Must comply with Appendix *MSFC–DOC–1949C VOL.5 APPENDIX D.*	Not NULL. Must comply with Appendix *MSFC–DOC–1949C VOL.5 APPENDIX D.*
Number of Limits Sets	PD.	1	3	1	Not NULL. 1 – 3.	Not NULL. 1 – 3.
Lower Limit Set 1	PD.				Not NULL.	Not NULL.
Upper Limit Set 1	PD.				Not NULL.	Not NULL.
Lower Limit Set 2	PD.				Not NULL.	Not NULL.
Upper Limit Set 2	PD.				Not NULL.	Not NULL.
Lower Limit Set 3	PD.				Not NULL.	Not NULL.
Upper Limit Set 3	PD.				Not NULL.	Not NULL.

TABLE LEVEL VALIDATION RULES FOR SCREEN A–13, TAB PCS, FROM THE FOLDER ONBOARD – PARAMETER PROCESSING REQUIREMENTS

NOTE: Using CDH Table Onboard PCS Limit Check Service – (ob_pcs_limit_chk_svc). This is a Child Table of the Payload Sub Element Requirements Definition Table; can have many Parameters (PUIs) per Sub Element.

No.	Validation Rules
1.	Lower and Upper Limit Values or Set Number 2 and 3 must not be NULL, if NUM_LIMITS field value is greater than or equal to two.
2.	Lower Limit Value must be less than the corresponding Upper Limit Value.
3.	If the Lower Limit is not NULL, then the Upper Limt must not be NULL.
4.	If the Upper Limit is not NULL, then the Lower Limt must not be NULL.

SCREEN A–14 COLUMN LEVEL VALIDATION RULES, TAB POLYNOMIALS, FROM THE FOLDER ONBOARD – PARAMETER PROCESSING REQUIREMENTS – PCS DEFINITIONS (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Min Value (Eng. Units)	PD.				Not NULL.	Not NULL.
Max Value (Eng. Units)	PD.				Not NULL.	Not NULL.
Degree	PD.	1	4		Not NULL. 1 – 4.	Not NULL. 1 – 4.
Coefficient 0	PD.				Not NULL. Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*	Not NULL. Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*
Coefficient 1	PD.				Not NULL. Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*	Not NULL. Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*
Coefficient 2	PD.			NULL.	If not NULL, then must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*	If not NULL, then must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*

SCREEN A–14 COLUMN LEVEL VALIDATION RULES, TAB POLYNOMIALS, FROM THE FOLDER ONBOARD – PARAMETER PROCESSING REQUIREMENTS – PCS DEFINITIONS (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Coefficient 3	PD.			NULL.	If not NULL, then must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*	If not NULL, then must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*
Coefficient 4	PD.			NULL.	If not NULL, then must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*	If not NULL, then must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*

TABLE LEVEL VALIDATION RULES FOR SCREEN A–14, TAB POLYNOMIALS, FROM THE FOLDER ONBOARD – PARAMETER PROCESSING REQUIREMENTS – PCS DEFINITIONS

NOTE: Using CDH table on–board polynomial coefficient (PC) (ob_pcs_pc). This is a child table of the payload sub element requirements definition table; can have two or more parameters (puis) per sub element.

No.	Validation Rules
1.	Degree must be equal to the number of coefficients minus one.
2.	Engineering Unit Min and Max Value field length must be no longer than 14 characters including decimal point.

SCREEN A–15 COLUMN LEVEL VALIDATION RULES, TAB LINEAR, FROM THE FOLDER ONBOARD – PARAMETER PROCESSING REQUIREMENTS – PCS DEFINITIONS (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Min Value (Eng. Units)	PD.				Not NULL. Must comply with Appendix *PDL SW VERIFICATION PLAN D683–35485 APPENDIX C–13*.	Not NULL. Must comply with Appendix *PDL SW VERIFICATION PLAN D683–35485 APPENDIX C–13*.
Max Value (Eng. Units)	PD.				Not NULL. Must comply with Appendix *PDL SW VERIFICATION PLAN D683–35485 APPENDIX C–13*.	Not NULL. Must comply with Appendix *PDL SW VERIFICATION PLAN D683–35485 APPENDIX C–13*.
Number of Segments (Max 30)	PD.	1	30	1	Not NULL. 1 – 30.	Not NULL. 1 – 30.
Segment Number	PD.				Not NULL.	Not NULL.
Segment A0	PD.				Not NULL.	Not NULL.
Segment A1	PD.				Not NULL.	Not NULL.
Segment Low	PD.			NULL.		
Segment High	PD.			NULL.		

TABLE LEVEL VALIDATION RULES FOR SCREEN A–15, TAB LINEAR, FROM THE FOLDER ONBOARD – PARAMETER PROCESSING REQUIREMENTS – PCS DEFINITIONS

NOTE: Using CDH Table On–board Linear Calibration– (ob_pcs_lc). This is a Child Table of the Payload Sub Element Requirements Definition Table; can have one or more Parameters (PUIs) per Sub Element. NOTE: USING CDH TABLE ON–BOARD LINEAR SEGMENTS – (OB_PCS_LC_SEGS). THIS IS A CHILD TABLE OF THE ONBOARD LINEAR TABLE; CAN HAVE ONE OR MORE SEGMENTS PER PARAMETERS (PUIS).

No.	Validation Rules
1.	Segment number can not be greater than the max number of segments

SCREEN A–16 COLUMN LEVEL VALIDATION RULES, TAB LRDL FROM THE FOLDER TELEMETRY – PACKET DEFINITION (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Pkt CN (Packet Correlation Number)	PD.	1	9999		Not NULL. 1 – 9999.	Not NULL. 1 – 9999.
Name	PD.				Not NULL. Must be unique per Payload, Fight, and Sub Element. Must comply with MSFC–DOC–1949C VOL.4, Appendix C.	Not NULL. Must be unique per Payload, Fight, and Sub Element. Must comply with MSFC–DOC–1949C VOL.4, Appendix C.
APID	PSI.	0	2047		Not NULL. Must be unique per Payload, Fight, and Sub Element. 0 – 2047.	Not NULL. Must be unique per Payload, Fight, and Sub Element. 0 – 2047.
Time ID	PD.			01	Not NULL. 01	Not NULL. 01
Packet Type	PD.			0	Not NULL. 0	Not NULL. 0
Version ID (version_id)	PD.	1	65535	1	Not NULL. 1 – 65535.	Not NULL. 1 – 65535.

SCREEN A–16 COLUMN LEVEL VALIDATION RULES, TAB LRDL FROM THE FOLDER TELEMETRY – PACKET DEFINITION (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Length (words)	PD.	If APID equals 876 , then Min = 2048, else min value = 50. (words)	If APID equals 876 or Payload Software Control Panel (PSCP) NS017.00P , then max = 2048 else max value = 640. (words)		Not NULL. If APID equals 876 then min value = 2048. If APID 876 or Payload Software Control Panel (PSCP) NS017.00P, then max value = 2048. Else the Min value = 50 and max value = 640. (words).	Not NULL. If APID equals 876 then min value = 2048. If APID 876 or Payload Software Control Panel (PSCP) NS017.00P, then max value = 2048. Else the Min value = 50 and max value = 640. (words).
Packet Rate/ Update Cycle	PD.				Not NULL.	NOT NULL.
Units	PD.				Not NULL. “PACKETS/SEC” or “KBPS”.	Not NULL. “PACKETS/SEC” or “KBPS”.
Update Rate	PD.	0.1 Hz	1.0 Hz	1.0 Hz	Not NULL. 0.1 or 1.0 Hz.	Not NULL. 0.1 or 1.0 Hz.
Processed Packet? POIC	PD.			“N “	Not NULL. “N” or “Y”.	Not NULL. “N” or “Y”.

TABLE LEVEL VALIDATION RULES FOR SCREEN A–16, TAB LRDL FROM THE FOLDER TELEMETRY – PACKET DEFINITIONS

NOTE: Using CDH Table Telemetry Down Link Data Definitions – (tlm_downlink_data_defs). This is a Child Table of the Payload Sub Element Requirements Definition Table; can have many Packets per Sub Element.

No.	Validation Rules
1.	If the Packet Correlation Number does not exist and the POIC Processed Flag value is “Y”, then a record will be created with the information from this Packet Correlation Number in the POIC table (tlm_packets) and (tlm_packet_format). (Screen A_19).
2.	If the same Packet Correlation Number exists for either LRDL, MRDL, and/or HRDL and the POIC Processed Flag value is “Y”, then packet format length, (screen A–19), must be the largest length of the three packets.
3.	For a Packet Correlatrion Number (PktCN) that exists for LRDL, MRDL, and/or HRDL, and the POIC flags are “Y”, if the POIC flag for the largest is set to “N”, then the packet format length, (screen A–19), must be updated with the largest format length with POIC flag = “Y”.
4.	Packet CN 9999 and APID 876 will not be selected or entered on this screen.

SCREEN A–17 COLUMN LEVEL VALIDATION RULES, TAB MRDL FROM THE FOLDER TELEMETRY – PACKET DEFINITION (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Pkt CN (Packet Correlation Number)	PD.	1	9999		Not NULL. 1 – 9999.	Not NULL. 1 – 9999.
Name	PD.				Not NULL. Must be unique per Payload, Fight, and Sub Element. Must comply with MSFC–DOC–1949C VOL.4, Appendix C.	Not NULL. Must be unique per Payload, Fight, and Sub Element. Must comply with MSFC–DOC–1949C VOL.4, Appendix C.
APID	DSM.	0	2047		Not NULL. Must be unique per Payload, Fight, and Sub Element. 0 – 2047.	Not NULL. Must be unique per Payload, Fight, and Sub Element 0 – 2047.
Time ID	PD.			01	Not NULL. 01	Not NULL. 01
Packet Type	PD.			0	Not NULL. 0	Not NULL. 0
Version ID	PD.	1	65535	1	Not NULL. 1– 65535.	Not NULL. 1– 65535.
Packet Minimum Length	PD.				Not NULL.	Not NULL.
Packet Nominal Length	PD.	50 (words)	750(words)		Not NULL. 50 – 750 (words)	Not NULL. 50 – 750 (words)
Packet Maximum Length	PD.				Not NULL.	Not NULL.
Packet Minimum Rate/ Update Cycle	PD.				Not NULL.	Not NULL.

SCREEN A–17 COLUMN LEVEL VALIDATION RULES, TAB MRDL FROM THE FOLDER TELEMETRY – PACKET DEFINITION (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Packet Nominal Rate/ Update Cycle	PD.				Not NULL.	Not NULL.
Packet Maximum Rate/ Update Cycle	PD.				Not NULL.	Not NULL.
Units	PD.				Not NULL. PACKETS/ SEC or KBPS.	Not NULL. PACKETS/SEC or KBPS.
Update Rate (HZ)	PD.				NULL. 0.1(HZ) or 1.0(HZ)	NULL. 0.1(HZ) or 1.0(HZ)
Separation	PD.			NULL.		
Parsing Methods	PD.				Not NULL. “PARSED” or “BURSED”.	Not NULL. “PARSED “ or “BURSED”.
Packet Proc? POIC	PD.			“N”	Not NULL. “N” or “Y”.	Not NULL. “N” or “Y”.

TABLE LEVEL VALIDATION RULES FOR SCREEN A–17, TAB MRDL FROM THE FOLDER TELEMETRY – PACKET DEFINITION

NOTE: Using CDH Table Telemetry Down Link Data Definitions – (tlm_downlink_data_defs). This is a Child Table of the Payload Sub Element Requirements Definition Table; can have many Packets per Sub Element.

No.	Validation Rules
1.	If the Packet Correlation Number does not exist and the POIC Processed Flag value is “Y”, then a record will be created with the information from this Packet Correlation Number in the POIC table (tlm_packets) and (tlm_packet_format). (Screen A–19).
2.	If the same Packet Correlation Number exists for either LRDL, MRDL and/or HRDL, and the POIC Processed Flag value is “Y”, then packet format length, screen A–19), must be the largest length of the three packets.
3.	For a Packet Correlatrion Number (PktCN) that exists for LRDL, MRDL, and/or HRDL, and the POIC flags are “Y”, if the POIC flag for the largest is set to “N”, then the packet format length, (screen A–19), must be updated with the largest format length with POIC flag = “Y”.
4.	Packet CN 9999 and APID 876 will not be selected or entered on this screen.

SCREEN A–18 COLUMN LEVEL VALIDATION RULES, TAB HRDL FROM THE FOLDER TELEMETRY – PACKET DEFINITION (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Pkt CN (Packet Correlation Number)	PD.	1	9999		Not NULL. 1 – 9999.	Not NULL. 1 – 9999.
Name	PD.				Not NULL. Must be unique per Payload, Fight, and Sub Element. Must comply with MSFC–DOC–1949C VOL.4, Appendix C.	Not NULL. Must be unique per Payload, Fight, and Sub Element. Must comply withMSFC–DOC–1949C VOL.4, Appendix C.
APID	DSM.	0	2047		Not NULL. Must be unique per Payload, Fight, and Sub Element. 0 – 2047.	Not NULL. Must be unique per Payload, Fight, and Sub Element. 0 – 2047.
Time ID	PD.			01	Not NULL. 01	Not NULL. 01
Packet Type	PD.			0	Not NULL. 0	Not NULL. 0
Version ID	PD.	1	65535	1	Not NULL. 1– 65535.	Not NULL. 1– 65535.
Length (Words)	PD.	50 (words).	2048 (words).		Not NULL. 50 –2048 (words).	Not NULL. 50 –2048 (words).
Packet Rate/Update Cycle	PD.				NOT NULL	NOT NULL
Units	PD.				Not NULL. “PACKETS/SEC” or “KBPS”.	Not NULL. “PACKETS/SEC” or “KBPS”.

SCREEN A–18 COLUMN LEVEL VALIDATION RULES, TAB HRDL FROM THE FOLDER TELEMETRY – PACKET DEFINITION (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Update Rate (HZ)	PD.				NULL. 0.1(HZ) or 1.0(HZ)	NULL. 0.1(HZ) or 1.0(HZ)
Separation	PD.	25	99999		Not NULL. 25 – 99999	Not NULL. 25 – 99999
Parsing Method	PD.			"BURST"	Not NULL. "BURST", "MICROBURST", "DISTRIBUTED"	Not NULL. "BURST", "MICROBURST", "DISTRIBUTED"
Protocol	PD.			"L"	Not NULL. "L" or "S".	Not NULL. "L" or "S".
Packet Proc? POIC	PD.			"N "	Not NULL. "N" or "Y".	Not NULL. "N" or "Y".

TABLE LEVEL VALIDATION RULES FOR SCREEN A–18, TAB HRDL FROM THE FOLDER TELEMETRY – PACKET DEFINITION

NOTE: Using CDH Table Telemetry Down Link Data Definitions – (tlm_downlink_data_defs). This is a Child Table of the Payload Sub Element Requirements Definition Table; can have many Packets per Sub Element.

No.	Validation Rules
1.	If the Packet Correlation Number does not exist and the POIC Processed Flag value is “Y”, then a record will be created with the information from this Packet Correlation Number in the POIC table (tlm_packets) and (tlm_packet_format). (Screen A–19).
2.	If the same Packet Correlation Number exists for either LRDL, MRDL, and/or HRDL, and the POIC Processed Flag value is “Y”, then packet format length, (screen A–19), must be the largest length of the three packets.
3.	For a Packet Correlatrion Number (PktCN) that exists for LRDL, MRDL, and/or HRDL, and the POIC flags are “Y”, if the POIC flag for the largest is set to “N”, then the packet format length, (screen A–19), must be updated with the largest format length value and POIC flag = “Y”.
4.	Packet CN 9999 and APID 876 will not be selected or entered on this screen.

SCREEN A–19 COLUMN LEVEL VALIDATION RULES, TAB POIC FROM THE FOLDER TELEMETRY – PACKET DEFINITION (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Time Tag PCN (Parameter Correlation Number)	PD.			NULL.		
Format Code PCN (Parameter Correlation Number)	PD.			NULL.		
Format Code (HEX)	PD.	0000	FFFF		Not NULL. Must be Uppercase Alphanumeric Characters. Must be unique per APID	Not NULL. Must be Uppercase Alphanumeric Characters. Must be unique per APID.
Length (Words)	PD.	1	2048 (words) (header included)		Not NULL. 2048 (words).	Not NULL. 2048 (words).
Update Cycle	PD.				NULL.	NULL.
Data Cycle	PD.				Not NULL.	Not NULL.
Packet Subset?	PD.			"N"	Not NULL. "Y" or "N".	Not NULL. "Y" or "N".

TABLE LEVEL VALIDATION RULES FOR SCREEN A–19, TAB POIC FROM THE FOLDER TELEMETRY – PACKET DEFINITION

NOTE: Using CDH Table Telemetry POIC Packet Definition – (tlm_packets). This is a Child Table of the Telemetry Down Link Data Definitions table; a one to one relationship. NOTE: Using CDH Table Telemetry Packet Formats – (tlm_packet_formats). This is a Child Table of the Telemetry Packet Definitions table; can have one or more format codes per Packet.

No.	Validation Rules
1.	Time Tag PCN must exist in the tlm_signal_pui table for this Flight, Development Level and Sub Element.
2.	Format Code PCN must exist in the tlm_signal_pui table for this Flight, Development Level and Sub Element.
3.	Packet 9999 (APID 876) will not be generated in this screen
4.	Packet format length cannot be greater than the packet nominal length on screens A–16, A–17, and A–18 respectively.

SCREEN A–20 COLUMN LEVEL VALIDATION RULES, TAB CONTENT DEF FROM THE FOLDER TELEMETRY – PACKET DEFINITION (SHEET 1 OF 3)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
PCN (Parameter Correlation Number)	PD.			NULL.		
Parameter Comp. (Composition)	PD.			“T”	Not NULL. “T”, “MS”, “BG”, or “NG”.	Not NULL. “T”, “MS”, “BG”, or “NG”.
Sample Comp. (Composition)	PD.			“ N”	Not NULL. “N”, “S”, “C”, or ‘R”.	Not NULL. “N”, “S”, “C”, or ‘R”.
Sample Rate	PD.	1	999	1	Not NULL. 1–999.	Not NULL. 1–999.
Sample Offset	PD.	1		NULL.	NULL.	NULL.
Sample Per Group	PD.	1		NULL.	NULL.	NULL.
Group Offset	PD.	1		NULL.	NULL.	NULL.
Syllable Number	PD.				Not NULL	Not NULL
Start Word	PD.	1		1	Not NULL	Not NULL
Start Bit	PD.	0	15	15	Not NULL. 0 – 15	Not NULL. 0 – 15
Data Length	PD.	1		1	Not NULL. For string data type, length is the number of characters (byte) in the syllable; otherwise, length contains the number of bits in the syllable.	Not NULL. For string data type, length is the number of characters (byte) in the syllable; otherwise, length contains the number of bits in the syllable.

SCREEN A–20 COLUMN LEVEL VALIDATION RULES, TAB CONTENT DEF FROM THE FOLDER TELEMETRY – RANGE PACKET DEFINITION (SHEET 2 OF 3)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Range PCN	PD. If Sample Composition = “R”, then a Range Parameter Correlation must be entered. NOTE MOVE THIS INFO TO APPENDIX A.			NULL.		
Low Range	PD.			NULL.	NULL.	NULL.
High Range	PD.			NULL.	NULL.	NULL.
State Code	PD.			NULL.	If Not NULL, then must exist in the State Code Table.	If Not NULL, then must exist in the State Code Table.

SCREEN A–20 COLUMN LEVEL VALIDATION RULES, TAB CONTENT DEF FROM THE FOLDER TELEMETRY – COUNTER PACKET DEFINITION (SHEET 3 OF 3)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Column Name	Type of User Responsible For Entering Data	Minimum Value	Maximum Value	Default Values	Valid Values	Valid values before Promoting to Interim Level
Counter PCN (Parameter Correlation Number)	PD.			NULL.		
Start Counter	PD.	–999	9999	NULL.	NULL.	NULL.
Offset Counter	PD.	2		NULL.	NULL.	NULL.

TABLE LEVEL VALIDATION RULES FOR SCREEN A–20, TAB CONTENT DEF FROM THE FOLDER TELEMETRY – PACKET DEFINITION

NOTE: Using CDH Table Telemetry Sampling Contents – (tlm_meas_reqts). This is a Child Table of the Telemetry Packet Definition table; can have one or more Parameter Correlation Numbers (PCN) per Packet. NOTE: Using CDH Table Telemetry Sampling Location – (tlm_meas_reqts_loc). This is a Child Table of the Telemetry Sampling Contents – (tlm_meas_reqts); can have one or more Parameter Correlation Numbers (PCN) per Packet.

No.	Validation Rules
1.	If Sample Composition value is “N”, “C”, or “R”, then Sample Rate must be 1.0.
2.	If Sample Composition value is “N”, “C”, or “R”, then Bit Offset must be NULL.
3.	If Sample Composition value is “S”, then Sample Rate must be greater than 1.0.
4.	If Sample Composition value is “S”, then Offset cannot be NULL.
5.	If Sample Composition value is “C”, then Counter PUI, Start Counter, and Offset Counter values cannot be NULL.
6.	If Sample Composition value is “C”, then Range PUI, Low Range, High Range and Range State Code must be NULL.
7.	If Sample Composition value is “R”, then the Counter PUI, Start Counter, and Offset Counter values must be NULL.
8.	If Sample Composition value is “R”, then Range PUI, Low Range, High Range, or Range PUI and state code values cannot be NULL.
9.	If Sample Composition value is “N” or “S”, then the Counter PUI, Start Counter, Offset Counter, Range PUI, Low Range, High Range, and State Code values must be NULL.
10.	If the Start Counter value is not NULL, then the Offset Counter value cannot be NULL.
11.	If the Offset Counter value is not NULL, then the Start Counter value cannot be NULL.
12.	If the Low Range value is not NULL, then the High Range value cannot be NULL.
13.	If the High Range Value is not NULL, then the Low Range value cannot be NULL.
14.	If the Low Range and High Range values are not NULL, then the High Range must be greater than the Low Range.
15.	If the Low Range and High Range values, or the State Code is not NULL, then the Start Counter and Offset Counter must be NULL.
16.	If the Low Range and High Range values are not NULL, then the State Code value must be NULL.
17.	If the Parameter Composition value is “BG”, then the Group Sample value must not be NULL.
18.	If the Parameter Composition value is “BG”, then the Group Offset value must not be NULL.
19.	If the Counter PUI is not NULL, then the Range PUI must be NULL.
20.	If the Range PUI is not NULL, then the Counter PUI must be NULL.
21.	If the Counter PUI is NULL, then the Start Counter and the Offset Counter values must be NULL.
22.	If the Range PUI is NULL, then the Low Range, High Range, and State Code values must be NULL.
23.	If the Data Type value is “IDIS”, “IUNSB”, “IUNSW”, IUNSX, or “IUNS” and the Total Length value is 32, then the Low Raw Count value must be greater than 0 and less than 4294967295. (Screen A–4)
24.	If the Data Type value is “IDIS”, “IUNSB”, “IUNSW”, IUNSX, or “IUNS” and the Total Length value is 32, then the High Raw Count value must be greater than 0 and less than 4294967295. (Screen A–4)
25.	If the Data Type value is “SASCB”, then the Total Length must be greater than or equal to 2 and less than or equal to 254 and evenly divisible by two. (Screen A–4)
26.	If the Data Type is “SASC”, “SASCB’, “SEBC”, “SUND”, or “TDMS”, then the Data Length is the number of bytes.

TABLE LEVEL VALIDATION RULES FOR SCREEN A–20, TAB CONTENT DEF FROM THE FOLDER TELEMETRY – PACKET DEFINITION

27.	If the Data Type is “IDIS”, “IMAG”, “IUNS”, “IUNSB”, “IUNSW”, “IUNSX”, “ITWO”, “ITWOW”, “ITWOB”, “ITWOX”, “FEEE”, “FIBM, “FMIL”, “FNTL”, “FSPL”, “FVAX”, “TISS”, “IBCD”, or “IDSI”, then the Total Data Length value is the number of bits.
28.	For the Low and the High Range fields, the total character length including the decimal cannot be greater than 16 characters. If all integers, then the decimal is not counted.
29.	If the Parameter Composition is Multi Syllable (MS), then the Sampling Location must have at least two (2) location records.
30.	If the Parameter Composition is not Multi Syllable (MS), then only one sampling location record must exist.
31.	If a PCN is marked as a counter parameter (screen A–5), then the sampling composition must be Normal “N”.
32.	If a PCN is marked as a range parameter (screen A–5), then the sampling composition must be Normal “N”.
33.	For a PCN value in the tlm_meas_reqts table, if the range_pui_id value in the tlm_meas_reqts table is not NULL and the data_type value for the range PCN value in the tlm_signal_pui table is ’IMAG’,’IUNS’, ’ITWO’,’ITWOW’,’IBCD’,’IDSI’,’FEE’,’FIBM’,’FMIL’,’FNTL’,’FSPL’, or ’FVAX’, then the state_code value in the tlm_meas_reqts table must be NULL for the PCN value in the tlm_meas_reqts table.
34.	The sum of lengths for each syllable must be equal to the total length.
35.	Syllable numbers for multisyllable PUI must be in ascending order.
36.	For the syllable_number values in the tlm_meas_reqts_loc table, the values must be sequential beginning with 1.
37.	If the Parameter Composition is Multi Syllable (MS), then the Sampling Location must have at least two (2) location records.
38.	If the Parameter Composition is not Multi Syllable (MS), then only one sampling location record must exist.
39.	The Total Length must equal the total length on screen A–4
40.	For a PCN value in the tlm_signal_pui table, the PCN value must match a PCN value in the tlm_meas_reqts_loc table.
41.	“SEXP” Data Type can be used by only one PCN per Packet Format and must be the last PCN for the Packet Format.

SCREEN A–21 COLUMN LEVEL VALIDATION RULES, TAB COUNTER DEF FROM THE FOLDER TELEMETRY – PACKET COUNTER DEFINITION OR TELEMETRY – PACKET – SUBSET DEFINITION (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Initial Value	PD.	–999		NULL	Not NULL	Not NULL
End Value	PD.	9999		NULL		
Wrap Around	PD.			"W"	Not NULL. "N" or "W"	Not NULL. "N" or "W"
Direction	PD.			"+"	Not NULL. "+" or "–"	Not NULL. "+" or "–"
Delta	PD.			"1"	Not NULL. "1"	Not NULL. "1"

TABLE LEVEL VALIDATION RULES FOR SCREEN A–21, TAB COUNTER DEF FROM THE FOLDER TELEMETRY – PACKET COUNTER DEFINITION OR TELEMETRY – PACKET – SUBSET DEFINITION

NOTE: Using CDH Table Telemetry Packet Signal Counters – (tlm_signal_counters). This is a Child Table of the Telemetry Packet Definition – (tlm_packets); can have one or more Parameter Correlation Numbers (PCN) per Packet.

No.	Validation Rules
1.	If Direction value is "+", then End Value must be greater than Initial Value.
2.	If Direction value is "–", then Initial Value must be greater than the End Value.
3.	For a PCN value in the tlm_meas_reqts table, if a counter_pui_id value is not NULL in the tlm_meas_reqts table (screens A–20 and A–23), then the counter_pui_id value must match a PCN value in the tlm_signal_counters table.

SCREEN A–22 COLUMN LEVEL VALIDATION RULES, TAB SUBSET FORMAT FROM THE FOLDER TELEMETRY – PACKET – SUBSET DEFINITION (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Subset ID	PD.	0	65535		Not NULL. 0 – 65535	Not NULL. 0 – 65535
Subset (PCN) Parameter Correlation Number	PD.			NULL		
Multiple Formats	PD.			"N"	Not NULL. "N" or "Y"	Not NULL. "N" or "Y"
Format (PCN) Parameter Correlation Number	PD.					
Sample Composition	PD.			"D"	Not NULL. "D"	Not NULL. "D"
Code (HEX)	PD.	0000	FFFF		Not NULL. 0000 –FFFF (Uppercase).	Not NULL. 0000 –FFFF (Uppercase).
Length	PD.	13	1280, 2048 (header included) for APID 876, subset zero (0).		Not NULL	Not NULL

TABLE LEVEL VALIDATION RULES FOR SCREEN A–22, TAB SUBSET FORMAT FROM THE FOLDER TELEMETRY – PACKET – SUBSET DEFINITION

NOTE: Using CDH Table Telemetry Subsets – (tlm_subsets). This is a Child Table of the Telemetry Packet Definition – (tlm_packets); can have one or more Parameter Correlation Numbers (PCN) per Packet. NOTE: Using CDH Table Telemetry Subset Formats – (tlm_subsets_formats). This is a Child Table of the Telemetry Subset definition – (tlm_subsets); can have one or more Format Codes per Subset.

No.	Validation Rules
	Sheet 1 of 1
1.	If the Sample Composition value is “D”, then the sample_rate value must be NULL.
2.	If the Sample Composition value is “D”, then the start_word value must be NULL.
3.	If the Sample Composition value is “D”, then the data_cycle value must be NULL.
4.	If the Sample Composition value is “D”, then the offset value must be NULL.
5.	If the Sample Composition value is “D”, then the range_pui_id value must be NULL.
6.	If the Subset Multiple Formats value is “Y”, then two or more Subset Format IDs must exist. (Screen A–23).
7.	If the Sample Composition value is “D”, then the Subset ID can only have one Format code.
8.	If APID is 876, then Subset Format Code record cannot be updated.
9.	The Subset ID value, along with the Format value, must be unique within the Subset Format table for each flight and development level.
10.	If the APID is 876, then the Subset Format Code cannot be updated.
11.	If the APID is 876 and the Subset Code is zero (0), then the Subset Format Code length cannot be changed.

SCREEN A–23 COLUMN LEVEL VALIDATION RULES, TAB CONTENT DEF FROM THE FOLDER TELEMETRY – PACKET – SUBSET DEFINITION (SHEET 1 OF 3)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
PCN (Parameter Correlation Number)	PD.					
Parameter Comp. (Composition)	PD.			"T"	Not NULL. "T", "MS", "BG", or "NG"	Not NULL. "T", "MS", "BG", or "NG"
Sample Comp. (Composition)	PD.			" N"	Not NULL. "N", "S", "C", or 'R"	Not NULL. "N", "S", "C", or 'R"
Sample Rate	PD.	1	999	1	Not NULL 1–999	Not NULL 1–999
Sample Offset	PD.	1		NULL	NULL	NULL
Group Sample	PD.	1		NULL	NULL	NULL
Group Sample Offset	PD.	1		NULL	NULL	NULL
Syllable Number	PD.				Not NULL	Not NULL
Start Word	PD.	1		1	Not NULL	Not NULL
Start Bit	PD.	0	15	15	Not NULL. 0 – 15	Not NULL. 0 – 15
Data Length	PD.	1		1	Not NULL. For string data type, length is the number of characters (byte) in the syllable; otherwise, length contains the number of bits in the syllable.	Not NULL. For string data type, length is the number of characters (byte) in the syllable; otherwise, length contains the number of bits in the syllable.

SCREEN A–23 COLUMN LEVEL VALIDATION RULES, TAB CONTENT DEF FROM THE FOLDER TELEMETRY – RANGE PACKET – SUBSET DEFINITION (SHEET 2 OF 3)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Range PCN	PD.			NULL		
Low Range	PD.			NULL	NULL	NULL
High Range	PD.			NULL	NULL	NULL
State Code	PD.			NULL	If Not NULL, then must exist in the State Code Table	If Not NULL, then must exist in the State Code Table

SCREEN A–23 COLUMN LEVEL VALIDATION RULES, TAB CONTENT DEF FROM THE FOLDER TELEMETRY – COUNTER PACKET – SUBSET DEFINITION (SHEET 3 OF 3)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Counter PCN (Parameter Correlation Number)	PD.			NULL		
Start Counter	PD.	–999	9999	NULL	NULL	NULL
Offset Counter	PD.	2		NULL	NULL	NULL

TABLE LEVEL VALIDATION RULES FOR SCREEN A–23, TAB CONTENT DEF FROM THE FOLDER TELEMETRY – PACKET – SUBSET DEFINITION

NOTE: Using CDH Table Telemetry Sampling Contents – (tlm_meas_reqts). This is a Child Table of the Telemetry Packet Definition table; can have one or more Parameter Correlation Numbers (PCN) per Packet. NOTE: Using CDH Table Telemetry Sampling Location – (tlm_meas_reqts_loc). This is a Child Table of the Telemetry Sampling Contents – (tlm_meas_reqts); can have one or more Parameter Correlation Numbers (PCN) per Packet.

No.	Validation Rules
1.	If Sample Composition value is “N”, “C”, or “R”, then Sample Rate must be 1.0.
2.	If Sample Composition value is “N”, “C”, or “R”, then Offset must be NULL.
3.	If Sample Composition value is “S”, then Sample Rate must be greater than 1.0.
4.	If Sample Composition value is “N”, then Offset cannot be NULL.
5.	If Sample Composition value is “C”, then Counter PUI, Start Counter, and Offset Counter values cannot be NULL.
6.	If Sample Composition value is “C”, then Range PUI, Low Range, High Range and Range State Code must be NULL.
7.	If Sample Composition value is “R”, then the Counter PUI, Start Counter, and Offset Counter values must be NULL.
8.	If Sample Composition value is “R”, then Range PUI, Low Range, High Range, or Range PUI and state code values cannot be NULL.
9.	If Sample Composition value is “N” or “S”, then the Counter PUI, Start Counter, Offset Counter, Range PUI, Low Range, High Range, and State Code values must be NULL.
10.	If the Start Counter value is not NULL, then the Offset Counter value cannot be NULL.
11.	If the Offset Counter value is not NULL, then the Start Counter value cannot be NULL.
12.	If the Low Range value is not NULL, then the High Range value cannot be NULL.
13.	If the High Range Value is not NULL, then the Low Range value cannot be NULL.
14.	If the Low Range and High Range values are not NULL, then the High Range must be greater than the Low Range.
15.	If the Low Range and High Range values, or the State Code is not NULL, then the Start Counter and Offset Counter must be NULL.
16.	If the Low Range and High Range values are not NULL, then the State Code value must be NULL.
17.	If the Parameter Composition value is “BG”, then the Group Sample value must not be NULL.
18.	If the Parameter Composition value is “BG”, then the Group Offset value must not be NULL.
19.	If the Counter PUI is not NULL, the Range PUI must be NULL.

20.	If the Range PUI is not NULL, then the Counter PUI must be NULL.
21.	If the Counter PUI is NULL, then the Start Counter and the Offset Counter values must be NULL.
22.	If the Range PUI is NULL, then the Low Range, High Range, and State Code values must be NULL.
23.	If the Data Type value is “IDIS”, “IUNSB”, “IUNSW”, IUNSX, or “IUNS” and the Total Length value is 32, then the Low Raw Count value must be greater than 0 and less than 4294967295. (Screen A–4)
24.	If the Data Type value is “IDIS”, “IUNSB”, “IUNSW”, IUNSX, or “IUNS” and the Total Length value is 32, then the High Raw Count value must be greater than 0 and less than 4294967295. (Screen A–4)
25.	If the Data Type value is “SASCB”, then the Total Length must be greater than or equal 2 and less than or equal to 254 and evenly divisible by two. (Screen A–4)
26.	If the Data Type is “SASC”, “SASCB’, “SEBC”, “SUND”, or then the Data Length is the number of bytes.
27.	If the Data Type is “IDIS”, “IMAG”, “IUNS”, “IUNSB”, “IUNSW”, “IUNSX”, “ITWO”, “ITWOW”, “ITWOB”, “ITWOX”, “FEEE”, “FIBM, “FMIL”, “FNTL”, “FSPL”, “FVAX”, “TISS”, “IBCD”, or “IDSI”, then the Total Data Length value is the number of bits.
28.	For the Low and the High Range fields, the total character length including the decimal can not be greater than 16 characters. If all integers, then the decimal is not counted.
29.	If the Parameter Composition is Multi Syllable (MS), then the Sampling Location must have at least two (2) location records.
30.	If the Parameter Composition is not Multi Syllable (MS), then only one sampling location record must exist.
31.	If a PCN is marked as a counter parameter (screen A–5), then the sampling composition must be Normal “N”.
32.	If a PCN is marked as a range parameter (screen A–5), then the sampling composition must be Normal “N”.
33.	For a PCN value in the tlm_meas_reqts table, if the range_pui_id value in the tlm_meas_reqts table is not NULL and the data_type value for the range PCN value in the tlm_signal_pui table is ’IMAG’,’IUNS’, ’ITWO’,’ITWOW’,’IBCD’,’IDSI’,’FEE’,’FIBM’,’FMIL’,’FNTL’,’FSPL’, or ’FVAX’, then the state_code value in the tlm_meas_reqts table must be NULL for the PCN value in the tlm_meas_reqts table.
34.	The sum of lengths for each syllable must be equal to the total length.
35.	Syllable numbers for multi syllable PUI must be in ascending order.
36.	For the syllable_number values in the tlm_meas_reqts_loc table, the values must be sequential beginning with 1.
37.	If the Parameter Composition is Multi Syllable (MS), then the Sampling Location must have at least two (2) location records.
38.	If the Parameter Composition is not Multi Syllable (MS), then only one sampling location record must exist.
39.	The Total Length must equal the total length on screen A–4

SCREEN A–24 COLUMN LEVEL VALIDATION RULES, TAB COMMANDS FROM THE FOLDER COMMANDS – COMMAND CORRELATION INITIALIZATION & COMMAND SOURCE REQUIREMENTS

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
CCN (Command Correlation Number)	PD.				Not NULL. Must be a unique number per Flight, Payload, and Development Level. Characters 1 – 3 must be alphanumeric and character 4 – 7 must be numeric. (Uppercase)	Not NULL. Must be a unique number per Flight, Payload, and Development Level. Characters 1 – 3 must be Alphanumeric and character 4 – 7 must be numeric. (Uppercase)
Command Mnemonic	PD.				Not NULL. Must be a unique descriptive name for the Flight and Development Level Element. Must comply with MSFC–DOC–1949C VOL.5, Appendix C. Letters must be Uppercase with no embedded blanks, slashes, periods, or tics. Beginning letter in the value must not be “#”.	Not NULL. Must be a unique descriptive name for the Flight and development Level. Must comply with MSFC–DOC–1949C VOL.5, Appendix C. Letters must be Uppercase with no embedded blanks, slashes, periods, or tics. Beginning letter in the value must not be “#”.

SCREEN A–24 COLUMN LEVEL VALIDATION RULES, TAB COMMANDS FROM THE FOLDER COMMANDS – COMMAND CORRELATION INITIALIZATION & COMMAND SOURCE REQUIREMENTS

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Cmd (Command) Name	PD.				Not NULL. Must be Alphabetic Characters. Uppercase.	Not NULL. Must be Alphabetic Characters. Uppercase.
Command Desc (Description)	PD.				Not NULL. Must comply with MSFC–DOC–1949C VOL.5, Appendix C.	Not NULL. Must comply with MSFC–DOC–1949C VOL.5, Appendix C.
Command PUI Seq Num Positions 9–12	DSM.			NULL	NULL	Not NULL
Command PUI Signal Type Position 13	DSM.			“K”	Not NULL.	Not NULL
Length	PD.	13	53		Not NULL. 13 – 53	Not NULL. 13 – 53
Variable Length	PD.			“N”	Not NULL. “N” or “Y”	Not NULL. “N” or “Y”
Cmd Type	PD.			“P”	Not NULL. “P” or “M”	Not NULL. “P” or “M”
PLMDM (Initiated)	PD.			“N”	Not NULL. “N” or “Y”	Not NULL. “N” or “Y”
PCS (Initiated)	PD			“N”	Not NULL. “N” or “Y”	Not NULL. “N” or “Y”
T/L (Timeliner Initiated)	PD.			“Y”	Not NULL. “N” or “Y”	Not NULL. “N” or “Y”
POIC (Initiated)	PD.			“Y”	Not NULL. “N” or “Y”	Not NULL. “N” or “Y”
Laptop (Express Initiated)	PD.			“N”	Not NULL. “N” or “Y”	Not NULL. “N” or “Y”
Remote (Initiated)	PD.			“N”	Not NULL. “N” or “Y”	Not NULL. “N” or “Y”
Shuttle MPLM (Initiated)	PD.			“N”	Not NULL. “N” or “Y”	Not NULL. “N” or “Y”

TABLE LEVEL VALIDATION RULES FOR SCREEN A–24, TAB COMMANDS FROM THE FOLDER COMMANDS – COMMAND CORRELATION INITIALIZATION & COMMAND SOURCE REQUIREMENTS

NOTE: Using CDH Table Command Correlation Initialization & Command Source Requirements (cmd_signal_pui). This is a Child Table of the Payload Sub Element Requirements Definition – (cdh_subpayload_reqts); can have one or more Command Correlation Numbers (CCNs) per Sub Element.

No.	Validation Rules
1.	If the Variable Length value is “Y”, then the Length value must be NULL.
2.	If the Variable Length value is “Y”, then the Command Type value must be ‘M.’
3.	If the Hazardous value is “Y” (screen A–25), then the Command Type value must be “P”.
4.	If Telemetry Verification value is “Y”, then the POIC or Remote originated flags (screen A–24) value must be “Y”.
5.	If Hazard Flag = “Y”, the Timeline Flag must be “N”.

SCREEN A–25 COLUMN LEVEL VALIDATION RULES, TAB COMMANDS FROM THE FOLDER COMMANDS – COMMAND CORRELATION INITIALIZATION & COMMAND SOURCE REQUIREMENTS

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Critical	PD.			"N"	Not NULL. "N" or "Y"	Not NULL. "N" or "Y"
Hazard	PD.			"N"	Not NULL. "N" or "Y"	Not NULL. "N" or "Y"
Std (Standard) Station Mode	PD.			"N"	Not NULL. "N" or "Y"	Not NULL. "N" or "Y"
Microgravity Mode	PD.			"N"	Not NULL. "N" or "Y"	Not NULL. "N" or "Y"

TABLE LEVEL VALIDATION RULES FOR SCREEN A–25, TAB COMMANDS FROM THE FOLDER COMMANDS – COMMAND CORRELATION INITIALIZATION & COMMAND SOURCE REQUIREMENTS

NOTE: Using CDH Table Command Correlation Initialization & Command Source Requirements (cmd_signal_pui). This is a Child Table of the Payload Sub Element Requirements Definition – (cdh_subpayload_reqts); can have one or more Command Correlation Numbers (CCNs) per Sub Element.

No.	Validation Rules
1.	If the hazard_flag value is "Y", then Initial State (screen A–27) must be "D".
2.	If the hazard_flag value is "Y", then the Command Type value must be "P" (screen A–24).
3.	If critical flag = "Y", then Initial State must be "D".
4.	If hazard flag = "Y", then Timeliner Flag must be "N".

SCREEN A–26 COLUMN LEVEL VALIDATION RULES, TAB PLMDM FROM THE FOLDER COMMANDS – COMMAND CORRELATION INITIALIZATION & COMMAND SOURCE REQUIREMENTS

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Shutdown	PD.			"N"	Not NULL. "N" or "Y"	Not NULL. "N" or "Y"
Standby	PD.			"N"	Not NULL. "N" or "Y"	Not NULL. "N" or "Y"
Startup	PD.			"N"	Not NULL. "N" or "Y"	Not NULL. "N" or "Y"
Exception Response Command	PD.			"N"	Not NULL. "N" or "Y"	Not NULL. "N" or "Y"

TABLE LEVEL VALIDATION RULES FOR SCREEN A–26, TAB PLMDM FROM THE FOLDER COMMANDS – COMMAND CORRELATION INITIALIZATION & COMMAND SOURCE REQUIREMENTS

NOTE: Using CDH Table Command Correlation Initialization & Command Source Requirements (cmd_signal_pui). This is a Child Table of the Payload Sub Element Requirements Definition – (cdh_subpayload_reqts); can have one or more Command Correlation Numbers (CCNs) per Sub Element.

No.	Validation Rules
1.	If Exception Respond Command value is "N", then Startup, Standby, or Shutdown value must be "Y".
2.	If Startup, Standby, and Shutdown value is "N", then at least one of the values must be "Y".

SCREEN A–27 COLUMN LEVEL VALIDATION RULES, TAB POIC/REMOTE FROM THE FOLDER COMMANDS – COMMAND DEFINITION

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
POIC (Initiated)	PD.					
Remote (Initiated)	PD.					
Time Constraint	PD.	0		0	Value must be in seconds	
Verification Delay	PD.	0		0	Value must be in seconds	
Telemetry Verification	PD.			“N”	Not NULL. “N” or “Y”	Not NULL. “N” or “Y”
Initial State	PD.			“E”	Not NULL. “D” or “E”	Not NULL. “D” or “E”

TABLE LEVEL VALIDATION RULES FOR SCREEN A–27, TAB POIC/ REMOTE FROM THE FOLDER COMMANDS – COMMAND DEFINITION

NOTE: Using CDH Command Correlation Initialization & Command Source Requirements (cmd_signal_pui). This is a Child Table of the Payload Sub Element Requirements Definition – (cdh_subpayload_reqts); can have one or more Command Correlation Numbers (CCNs) per Sub Element.

No.	Validation Rules
1.	If Telemetry Verification value is “Y”, then the POIC or RemoteOriginated flags (screen A–24) value must be “Y”.
2.	If Hazard (screen A–25) is “Y”, then Initial State (screen A–27) must be “D”.
3.	If the Telemetry Verification Flag value is “Y”, then the Verification Delay value must not be NULL.
4.	If critical flag = “Y”, then Initial State must be “D”.

SCREEN A–28 COLUMN LEVEL VALIDATION RULES, TAB TLM VERIFICATION FROM THE FOLDER COMMANDS – COMMAND DEFINITION

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
PCN	PD.				Not NULL.	Not NULL.
State Code	PD.			NULL		
Range Low	PD.			NULL		
Range High	PD.			NULL		

TABLE LEVEL VALIDATION RULES FOR SCREEN A–28, TAB TLM VERIFICATION FROM THE FOLDER COMMANDS – COMMAND DEFINITION

NOTE: Using CDH Table Command Telemetry Verification Definition (cmd_tlm_verif). This is a Child Table of the Payload Sub Element Requirements Definition – (cdh_subpayload_reqts); can have one or more Command Correlation Numbers (CCNs) per Sub Element.

No.	Validation Rules
1.	If Verification State Code value is not NULL, then the Verification Range Low and Verification Range High must be NULL.
2.	If the Verification State Code value is NULL, then the Verification Range Low and Verification Range High must not be NULL.
3.	If the Verification Range Low and Verification Range High values are not NULL, then the Verification Range High value must be greater than or equal to the Verification Range Low value.
4.	If the Verification Range Low value is not NULL, then the Verification High value cannot be NULL.
5.	The PCN must exist in the tlm_signal_pui table for the same Flight, Payload, Development Level, and Sub Element.
6.	If Verification State Code value is not NULL, then the State Codes must exists for that PCN in the State Code (tlm_meas_sc) table

SCREEN A–29 COLUMN LEVEL VALIDATION RULES, TAB FIELD INIT FROM THE FLDER COMMANDS – FIELD DEFINITION

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Field Mnemonic	PD.				Not NULL. Must be Uppercase Alphanumeric. Must be unique for the Command Mnemonic.	Not NULL. Must be Uppercase Alphanumeric. Must be unique for the Command Mnemonic.
Field Description	PD.				Must comply with DECIMAL AND HEXEDECIMAL VALUES FOR STANDARD ASCII CHARACTER SET TABLE.	Must comply with Appendix DECIMAL AND HEXEDECIMAL VALUES FOR STANDARD ASCII CHARACTER SET TABLE.
Start Word	PD.	1			Not NULL. 1 – 53	Not NULL. 1 – 53
Start Bit	PD.	0			Not NULL. 0 – 15	Not NULL. 0 – 15
Field Length	PD.	0			Not NULL	Not NULL
Variable Field Length	PD.			“N”	Not NULL. “N” or “Y”	Not NULL. “N” or “Y”
Input Data Type	PD.				Not NULL. “A”, “B”, “D”, “G”, “H”, or “O”	Not NULL. “A”, “B”, “D”, “G”, “H”, or “O”

SCREEN A–29 COLUMN LEVEL VALIDATION RULES, TAB FIELD INIT FROM THE FLDER COMMANDS – FIELD DEFINITION

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Uplink Data Type	PD.				Not NULL. Must comply with MSFC–STD–1274C, Appendix B.	Not NULL. Must comply with MSFC–STD–1274C, Appendix B.
Cmd (Command) Field Type	PD.				Not NULL. “M” or “P”	“Not NULL. “M” or “P”
Data/Value	PD.				Must comply with DECIMAL AND HEXEDECIMAL VALUES FOR STANDARD ASCII CHARACTER SET TABLE.	Must comply with DECIMAL AND HEXEDECIMAL VALUES FOR STANDARD ASCII CHARACTER SET TABLE.

TABLE LEVEL VALIDATION RULES FOR SCREEN A–29, TAB FIELD INIT FROM THE FOLDER COMMANDS – FIELD DEFINITION (SHEET 1 OF 2)

NOTE: Using CDH Table Command Field Definition (cmd_field). This is a Child Table of the Command Signal PUIs (cmd_signal_pui); can have one or more Command Field Mnemonics per Command Correlation Numbers (CCN).

No.	Validation Rules
1.	If Field Length is NULL, then Variable Field Length flag must be “Y”.
2.	If Variable Length value is “N”, then Field Length must not be NULL.
3.	If Variable Length value is “Y”, then Input Data Type must be “H”, and Uplink Data Type must be “IUNS”.
4.	If Hazard Flag value is “Y”, then Initial State value must be “D” and Command Field Type must be “P”.
5.	If Command Field Type value is “P”, and the Input Data Type is not NULL, then the Data/Value cannot be NULL.
6.	If the Calibration Type value is “PC” or “PP”, then Input Data Type must be “D” or “G”.
7.	If the Calibration Type value is “SC” (screen A–30), then the Input Data Type must be “A” and the Uplink Data Type must be “IDIS” or “IUNS”.
8.	The Field Length, Start Word and Start Bit values for all command fields with the same Command Mnemonics must be defined such that the fields do not overlap and there are no gaps between fields.
9.	If the Input Data Type value is “A”, then the Uplink Data Type values must be “IDIS”, “IUNS”, “SASC”, “SASCB”, or “SEBC”.
10.	If the Input Data Type value is “B”, then the Uplink Data Type values must be “IDIS”, “IPAR”, or “IUNS”
11.	If the Input Data Type value is “D”, then the Uplink Data Type values must be “FEEE”, “FIBM”, “IBCD”, “IDSI”, “IMAG”, “ITWO”, or “IUNS”.
12.	If the Input Data Type value is “G”, then the Uplink Data Type values must be “FEEE” or “FIBM”.
13.	If the Input Data Type value is “H”, then the Uplink Data Type values must be “IUNS” or “SUND”.
14.	If the Input Data Type value is “O”, then the Uplink Data Type values must be “IUNS”.
15.	If the Input Data Type value is NULL, then the Cmd Field Type must be “P”.
16.	If the Input Data Type value is “A” and the Calibration Type value is “N”, then the Uplink Data Type must be “SASC”, “SEBC”, or “SASCB”.
17.	If the Input Data Type value is “A”, then the Range Low and Range High must be NULL.
18.	If the Uplink Data Type value is “IPAR”, then the Command Field Type value must be “P”.
19.	If the Uplink Data Type value is “SASCB”, then the Length value must be even.
20.	The Data/Value must be consistent with the defined Input Data Type.
21.	If the Input Data Type value is NULL, then the Data/Value must be NULL.
22.	If the Variable Length value is “N”, then the Length value must be consistent with the valid lengths defined in Appendix MSFC–DOC–1949C VOL.6 TABLE 2.1.3.–1, MSFC–STD–1274B VOL. 2 APPENDIX B and *MSFC–DOC–1949C VOL.5 TABLE I–3*, for the Uplink Data Type.
23.	The Data/Value must be greater than or equal to the Range Low Value and less than or equal to the Range High Value.
24.	If the Variable Length value is “Y”, then the Input Data Type value must be “H”.
25.	If the Input Data Type value is NULL, then the Command Field Type value must be “P”.
26.	The Range Low value (screen A–30) must be consistent with the defined Input Data Type.
27.	The Range High value (screen A–30) must be consistent with the defined Input Data Type.

TABLE LEVEL VALIDATION RULES FOR SCREEN A–29, TAB FIELD INIT FROM THE FOLDER COMMANDS – FIELD DEFINITION (SHEET 1 OF 2)

28.	If the Tolerance value (screen A–30) is not NULL, then the Uplink Data Type must be “IBCD”, “IDSI”, “IMAG”, “ITWO”, or “IUNS”.
29.	If the Data/Value is not NULL, the Tolerance value (screen A–30) is NULL, and the Uplink Data Type value is “IBCD”, “IDIS”, “IMAG”, “ITWO”, or “IUNS”, then the calibrated and converted Data/Value value must be an integer.
30.	If the Data/Value is not NULL and the Tolerance value (screen A–30) is NULL, then the calibrated and converted Data/Value value must be within the maximum deviation specified by Tolerance of the nearest integer value.
31.	If value in the Data Value field is not NULL, and the Variable Length flag is “N”, the converted value must fit in the Length defined for the Command Field of the length value.
32.	If the Variable Length flag value is “Y”, then the Command Field Type value must be “M”.

SCREEN A–30 COLUMN LEVEL VALIDATION RULES, TAB FIELD DEF FROM THE FOLDER COMMANDS – FIELD DEFINITION

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Engineering Units	PD.				Not NULL. Must comply with Appendix *MSFC–DOC–1949C VOL.5 APPENDIX D.*	Not NULL. Must comply with Appendix *MSFC–DOC–1949C VOL.5 APPENDIX D.*
Range Low	PD.				Not NULL	Not NULL
Range High	PD.				Not NULL	Not NULL
Cal (Calibration) Type	PD.				Not NULL. “N”, “PC”, “PP”, or “SC”	Not NULL. “N”, “PC”, “PP”, or “SC”
Cal (Calibration) Switch Flag	PD.			“N”	Not NULL. “N” or “Y”	Not NULL. “N” or “Y”
Tolerance	PD.					

TABLE LEVEL VALIDATION RULES FOR SCREEN A–30, TAB FIELD DEF FROM THE FOLDER COMMANDS – FIELD DEFINITION

NOTE: Using CDH Table Command Field Definition (cmd_field). This is a Child Table of the Command Signal PUIs (cmd_signal_pui); can have one or more Command Field Mnemonics per Command Correlation Numbers (CCN).

No.	Validation Rules
1.	The value for Range Low must be less than or equal to the value for Range High.
2.	If the Calibration Type value is “PC” or “PP”, then Input Data Type (screen A–29) must be “D” or “G”.
3.	If the Calibration Type value is “PC”, “PP”, or “SC”, then the Calibration Default Set Number (screens A–31, A–32, A–33) cannot be NULL;
4.	If the Calibration Type value is “SC”, the Input Data Type must be “A” and the Uplink Data Type must be “IDIS” or “IUNS”.
5.	If the Input Data Type value (screen A–29) is “A” and the Calibration Type value is “N”, then the Uplink Data Type must be “SASC”, “SEBC”, or “SASCB”.
6.	If the Input Data Type value (screen A–29) is “A”, then the Range Low and Range High must be NULL.
7.	The Data/Value value (screen A–29) must be greater than or equal to the Range Low Value and less than or equal to the Range High Value.
8.	The Range Low value must be consistent with the defined Input Data Type (screen A–29).
9.	The Range High value must be consistent with the defined Input Data Type (screen A–29).
10.	If the Tolerance value is not NULL, then the Calibration Type must be “PC” or “PP”.
11.	If the Tolerance value is not NULL, then the Uplink Data Type must be “IBCD”, “IDSI”, “IMAG”, “ITWO”, or “IUNS” (screen A–29).
12.	If the Data/Value value (screen A–29) is not NULL, the Tolerance value is NULL, and the Uplink Data Type value (screen A–29) is “IBCD”, “IDIS”, “IMAG”, “ITWO”, or “IUNS”, then the calibrated and converted Data/Value value must be an integer.
13.	If the Data/Value value (screen A–29) is not NULL and the Tolerance value is NULL, then the calibrated and converted Data/Value value must be within the maximum deviation specified by Tolerance of the nearest integer value.

SCREEN A–31, A–32 AND A–33 COLUMN LEVEL VALIDATION RULES TAB POINT PAIRS, POLYNOMIALS OR STATE CODES FROM THE FOLDER COMMANDS – CALIBRATION DEFINITIONS

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Cal (Calibration) Switch Field Mnemonic	PD.					
Low Range	PD.				Not NULL	Not NULL
High Range	PD.				Not NULL	Not NULL

TABLE LEVEL VALIDATION RULES FOR SCREEN A–31, A–32 AND A–33 TAB Point Pairs, Polynomials OR State Codes FROM THE FOLDER Commands – Calibration Definitions

NOTE: Using CDH Table Command Calibration Switching Definition (cmd_cal_sw). This is a Child Table of the Command Field – (cmd_field) table; can have only one Calibration Switching record per Command Field.

No.	Validation Rules
1.	The Cal Switch field Mnemonic value for a given calibration set must not be the same as the Field Mnemonic value for that calibration set.
2.	The Cal Switch Mnemonic and the Field Mnemonic must be part of the same command

SCREEN A–31 COLUMN LEVEL VALIDATION RULES, TAB POINT PAIRS FROM THE FOLDER – CALIBRATION DEFINITIONS

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Calibration Set Number	PD.	1	100	NULL	If Not NULL, 1–100	If not NULL, 1–100
Set Number	PD.	1	100	1	Not NULL 1–100	Not NULL 1–100
Pair Count	PD.	Must Comply with Appendix *PDL SW VERIFICATION PLAN D683–35485 APPENDIX C–13*.	Must Comply with Appendix *PDL SW VERIFICATION PLAN D683–35485 APPENDIX C–13*.		Not NULL. Must Comply with Appendix *PDL SW VERIFICATION PLAN D683–35485 APPENDIX C–13*.	Not NULL. Must Comply with Appendix *PDL SW VERIFICATION PLAN D683–35485 APPENDIX C–13*.
Pair Value	PD.				Not NULL	Not NULL

TABLE LEVEL VALIDATION RULES FOR SCREEN A–31, TAB POINT PAIRS FROM THE FOLDER COMMANDS – CALIBRATION DEFINITIONS

NOTE: Using CDH Table Command Point Pair (PP) Calibration Definition. This is a Child Table of the Command Field table – (cmd_field); must have two or more point pair records per Command Field.

No.	Validation Rules
1.	If the Calinration Type value is “PC”, “PP”, or “SC” (screen A–30), then the Calibration Default Set Number cannot be NULL.
2.	If the tolerance is not NULL, then the Calibration Type must be “PC” or “PP” (screen A–30).
3.	The Pair Counts and Pair Values for a given calibration set must be defined such that the graph described by the point pairs of the calibration set is continuously increasing or decreasing.
4.	There must be at least two point pairs defined for each calibration set.
5.	If the Calibration Switch Flg value is “N”, then the Default Set Number and the Set Number values cannot be greater than 1.
6.	For Point Pair Set Number values, the values must be sequential beginning with 1.
7.	If the Calibratin Switch Flag is checked, then the Calibration Default Set Number must no be NULL.
8.	If Calibration Type is “N”, then the Default Set Number value must be NULL.
9.	For the Pair Value field, the total character length including the decimal can not be greater than 16 characters. If all integers, then the decimal is not counted.

SCREEN A–32 COLUMN LEVEL VALIDATION RULES, TAB POLYNOMIALS FROM THE FOLDER COMMANDS – CALIBRATION DEFINITIONS

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Calibration Default Set Number	PD.	1	100	NULL	If Not NULL, 1–100	If Not NULL, 1–100
Set Number	PD.	1	100	1	Not NULL 1–100	Not NULL 1–100
Low Counts	PD.				Not NULL	Not NULL
High Counts	PD.				Not NULL	Not NULL
Degree	PD.	1	5	1	Not NULL. 1 – 5	Not NULL. 1 – 5
Coefficient A0	PD.				Not NULL. Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*	Not NULL. Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*
Coefficient A1	PD.				Not NULL. Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*	Not NULL. Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*
Coefficient A2	PD.				If Not NULL then, Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*	If Not NULL then, Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*

SCREEN A–32 COLUMN LEVEL VALIDATION RULES, TAB POLYNOMIALS FROM THE FOLDER COMMANDS – CALIBRATION DEFINITIONS

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Coefficient A3	PD.				If Not NULL then, Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*	If Not NULL then, Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*
Coefficient A4	PD.				If Not NULL then, Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*	If Not NULL then, Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B*
Coefficient A5	PD.				If Not NULL then, Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*	If Not NULL then, Must comply with Appendix *MSFC–DOC–1949C VOL.4 APPENDIX B.*

TABLE LEVEL VALIDATION RULES FOR SCREEN A–32, TAB POLYNOMIALS FROM THE FOLDER COMMANDS – CALIBRATION DEFINITIONS

NOTE: Using CDH Table Command Polynomial Coefficient (PC) Calibration Definition (cmd_pc). This is a Child Table of the Command Field – (cmd_field) table; must have two or more polynomial records per Command Field.

No.	Validation Rules
1.	The COEF2 value must be 0 or NULL if the DEGREE value is less than 2.
2.	The COEF3 value must be 0 or NULL if the DEGREE value is less than 3.
3.	The COEF4 value must be 0 or NULL if the DEGREE value is less than 4.
4.	The COEF5 value must be 0 or NULL if the DEGREE value is less than 5.
5.	For the Low and High Range fields, the total character length including the decimal can not be greater than 16 characters. If all integers, then the decimal is not counted.
6.	For a Polynomial Coefficient Set Number, the minimum number of Coefficient is 2.
7.	If the Calibration Switch Flag is “Y”, then the Default Set Number must not be null.
8.	If the Calibration Switch Flag is checked, then the Calibration Type must be “PC”, “PP”, or “SC”.
9.	If the Calibration Switch Flag is checked, then the Calibration Default Set Number must not be NULL.
10.	If the Calibration Type is “N”, then the Default Set Number value must be NULL

SCREEN A–33 COLUMN LEVEL VALIDATION RULES FOR, TAB STATE CODES, FROM THE FOLDER COMMANDS – CALIBRATION DEFINITIONS

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Default Set Number	PD.	1	100	NULL	Not NULL 1–100	Not NULL 1–100
Set Number	PD.	1	100	1	Not NULL 1–100	Not NULL 1–100
State Code	PD.			“ “ Character blank	Not NULL. Must comply with MSFC–DOC–1949C VOL.5, Appendix C.	Not NULL. Must comply with MSFC–DOC–1949C VOL.5, Appendix C.
Counts	PD.				Not NULL. Must comply with Appendix PDL SW VERIFICATION PLAN D683–35485 APPENDIX C–13.	Not NULL. Must comply with Appendix *PDL SW VERIFICATION PLAN D683–35485 APPENDIX C–13*.

TABLE LEVEL VALIDATION RULES FOR SCREEN A–33, TAB STATE CODES, FROM THE FOLDER COMMANDS – CALIBRATION DEFINITIONS

NOTE: Using CDH Table Command State Codes (SC) Calibration Definition (cmd_sc). This is a Child Table of the Command Field – (cmd_field) table; must have two or more State Code records per Command Field.

No.	Validation Rules
1.	If Calibration Type value is “SC”, then a record must exist in the State Code table.
2.	For the Set Number values, the values must be sequential beginning with 1.

SCREEN A–34 COLUMN LEVEL VALIDATION RULES FOR, TAB BROADCAST FROM THE FOLDER SERVICES

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Broadcast Ancillary Data Flag	PD.				Not NULL. “Y” or “N”	Not NULL. “Y” or “N”
Broadcast Time Flag	PD.				Not NULL. “Y” or “N”	Not NULL. “Y” or “N”

TABLE LEVEL VALIDATION RULES FOR SCREEN A–34, TAB BROADCAST FROM THE FOLDER SERVICES

NOTE: Using CDH Table Broadcast Data Identification and Payload Unique Ancillary Data Set (cdh_ancillary_data). This is a Child Table of the Payload Sub Element Requirements Definition (cdh_subpayload_reqts) table; can have one or more records per Payload.

No.	Validation Rules
1.	N/A

SCREEN A–35 COLUMN LEVEL VALIDATION RULES, TAB ANCILLARY FROM THE FOLDER SERVICES

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Data Set Number	PD.	1	100	1	Not NULL. 1 – 100	Not NULL. 1 – 100
Transmit Rate	PD.	0.1 Hz	1.0 Hz		Not NULL. 0.1 or 1.0 Hz	Not NULL. 0.1 or 1.0 Hz
PUI Type	DSM.			”T”	Not NULL. Must be ”B”AD, ”P”AD, or ”TLM”.	Not NULL. Must be ”B”AD, ”P”AD, or ”TLM”.
PCN (Parameter Correlation Number)	PD.					
Ancillary PUI Device (Positions 1–8)	DSM.				Not NULL. Must be upper case. Positions 1 and 3 must be alpha. Position 2 must be alphanumeric. Position 4 must be alpha. Positions 5 and 6 must be numeric. Positions 7–8 must be alpha.	Not NULL. Must be upper case. Positions 1 and 3 must be alpha. Position 2 must be alphanumeric. Position 4 must be alpha. Positions 5 and 6 must be numeric. Positions 7–8 must be alpha.
Ancillary PUI Seq Num (Positions 9–12)	DSM.				Not NULL. Must be upper case alphanumeric characters in the 4 positions.	Not NULL. Must be upper case alphanumeric characters in the 4 positions.

SCREEN A–35 COLUMN LEVEL VALIDATION RULES, TAB ANCILLARY FROM THE FOLDER SERVICES

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Ancillary PUI Signal Type (Position 13)	PD.				Not NULL. Must comply with Appendix D684–10056–01 REV.K APPENDIX E excluding ”K” and ”G” for Telemetry.	Not NULL. Must comply with Appendix D684–10056–01 REV.K APPENDIX E excluding ”K” and ”G”for Telemetry.
Parameter/technical Name	PD.				Not NULL. Must comply with MSFC–DOC–1949C VOL.4, Appendix C.	Not NULL. Must comply with MSFC–DOC–1949C VOL.4, Appendix C.
Parameter Description	PD.				Not NULL. Must comply with MSFC–DOC–1949C VOL.4, Appendix C.	Not NULL. Must comply with MSFC–DOC–1949C VOL.4, Appendix C.
Word Number	DSM.	1	23		Not NULL. 1–23	Not NULL. 1–23

TABLE LEVEL VALIDATION RULES FOR SCREEN A–35, TAB ANCILLARY FROM THE FOLDER SERVICES

NOTE: Using CDH Table Ancillary Data Set (cdh_ancillary_data_set). This is a Child Table of the Broadcast Data Identification and Payload Unique Ancillary Data Set (cdh_ancillary_data) table; can have one or more records per Ancillary Data record. NOTE: Using CDH Table Ancillary Data Request Data (cdh_ancillary_data_reqts). This is a Child Table of the Ancillary Data Set (cdh_ancillary_data_set) table; can have one or more records per Ancillary Data Set record.

No.	Validation Rules
1.	Only PCNs with the Ancillary flag set to “Y”, (screen A–11) can be entered on this screen

SCREEN A–36 COLUMN LEVEL VALIDATION RULES, TAB FTS FROM THE FOLDER SERVICES

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
File Name	PD.				Not NULL. Must be Alpha–numeric character or an underscore. Must letter must be a Alphanumeric character (Uppercase).	Not NULL. Must be Alpha–numeric character or a underscore. Must letter must be a Alphanumeric character (Uppercase).
File ID Number	PD.	0	500		If Not NULL. 0 – 500	Not NULL. 0 – 500
File Size	PD.				Not NULL	Not NULL
File Description	PD.				If Not NULL. Must Comply with DECIMAL AND HEXEDECIMAL VALUES FOR STANDARD ASCII CHARACTER SET TABLE.	Not NULL. Must Comply with DECIMAL AND HEXEDECIMAL VALUES FOR STANDARD ASCII CHARACTER SET TABLE.
File Access Read	PD.			NULL	"R" or NULL	"R" or NULL
File Access Write	PD.			NULL	"W" or NULL	"W" or NULL

TABLE LEVEL VALIDATION RULES FOR SCREEN A–36, TAB LDRL FTS FROM THE FOLDER SERVICES

NOTE: Using CDH Table LDRL File Transfer Service (cdh_ldrl_fts). This is a Child Table of the Payload Sub Element Requirements Definition – (cdh_subpayload_reqts) table; can have one or more File Names per Sub Element.

No.	Validation Rules
1.	N/A

SCREEN A–37 COLUMN LEVEL VALIDATION RULES, TAB TIMELINER DEF FROM THE FOLDER SERVICES

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Bundle Name	PD.				Not NULL. Must comply with MSFC–DOC–1949 Vol. 5, Appendix C (uppercase).	Not NULL. Must comply with MSFC–DOC–1949 Vol. 5, Appendix C (uppercase).
Bundle ID Number	PD.	0	65535		Not NULL. 0 – 65535	Not NULL. 0 – 65535
Bundle File Name	PD.				\.TLX	\.TLX
Bundle File Description	PD.				Not NULL. Must comply with MSFC–DOC–1949 Vol. 5, Appendix C (uppercase).	Not NULL. Must comply with MSFC–DOC–1949 Vol. 5, Appendix C (uppercase).
Halt Bundle	PD.			“N”	Not NULL. “Y” or “N”	Not NULL. “Y” or “N”
Sequence Name	PD.				Not NULL. Must comply with MSFC–DOC–1949 Vol. 5, Appendix C (uppercase).	Not NULL. Must comply with MSFC–DOC–1949 Vol. 5, Appendix C (uppercase).
Sequence ID Number	PD	0	65535	NULL	If Not NULL. 0 – 65535	Not NULL.
Sequence Description	PD				Not NULL. Must complyt with MSFC–DOC–1949 Vol. 5, Appendix C (uppercase).	Not NULL. Must comply with MSFC–DOC–1949 Vol. 5, Appendix C (uppercase).

SCREEN A–37 COLUMN LEVEL VALIDATION RULES, TAB TIMELINER DEF FROM THE FOLDER SERVICES

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Start Sequence	PD.			"N"	Not NULL. "N" or "Y"	Not NULL. "N" or "Y"
Stop Sequence	PD.			"N"	Not NULL. "N" or "Y"	Not NULL. "N" or "Y"
Resume Sequence	PD.			"N"	Not NULL. "N" or "Y"	Not NULL. "N" or "Y"

TABLE LEVEL VALIDATION RULES FOR SCREEN A–37, TAB TIMELINER DEF FROM THE FOLDER SERVICES

NOTE: Using CDH Table Timeliner Definition (cdh_tl_bundle). This is a Child Table of the Payload Sub Element Requirements Definition – (cdh_subpayload_reqts) table; can have one or more Bundle Name per Sub Element. NOTE: Using CDH Table Timeliner Bundles Sequences (cdh_tl_bundle_seq). This is a Child Table of the Timeliner Bundles – (cdh_tl_bundle) table; can have one or more Sequences per Bundle Name.

No.	Validation Rules
	Sheet 1 of 2
1.	A single owner can own many Timeliner measurements, but each measurement only has one owner.
2.	Max of 50 bundles process to be run at one time for each Timeliner bundle.
3.	All statements in a bundle are numbered sequentially, starting with a value of 1
4.	Statement numbers are reset to one at the start of each sequence

SCREEN A–38 COLUMN LEVEL VALIDATION RULES, TAB VIDEO FROM THE FOLDER SERVICES

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Video Uplink	PD.			"N"	Not NULL. "N" or "Y"	Not NULL. "N" or "Y"
Video Uplink Rate	PD.			NULL		
Video Uplink Digital Duration	PD.	0	99999		Not NULL. 0 – 99999	Not NULL. 0 – 99999
Video Digital Downlink via HDRL	PD.			"N"	Not NULL. "N" or "Y"	Not NULL. "N" or "Y"
Video Digital Downlink Rate	PD.			NULL		
Video Digital Downlink Duration	PD.	0	99999		Not NULL. 0 – 99999	Not NULL. 0 – 99999

SCREEN A–38 COLUMN LEVEL VALIDATION RULES, TAB VIDEO FROM THE FOLDER SERVICES

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Video Analog Downlink via ISS Video Baseband Signal Processor	PD.			"N"	Not NULL. "N" or "Y"	Not NULL. "N" or "Y"
Video Analog Resolution	PD.				Not NULL. 6 or 8	Not NULL. 6 or 8
Video Analog Frame to Frame Rate	PD.				Not NULL. 1.875 , 7.5, 15, or 30	Not NULL. 1.875 , 7.5, 15, or 30
Video Analog Frame Rate Type	PD.				Not NULL. "Half Frame/Per Sec" or "Full Frame Per/Sec"	Not NULL. "Half Frame/Per Sec" or "Full Frame Per/Sec"
Video Analog Downlink Duration	PD.	0 (seconds)	99999 (seconds)		Not NULL. 0 – 99999	Not NULL. 0 – 99999

TABLE LEVEL VALIDATION RULES FOR SCREEN A–38, TAB VIDEO FROM THE FOLDER SERVICES

NOTE: Using CDH Table Video Data (cdh_video_data). This is a Child Table of the Payload Sub Element Requirements Definition –(cdh_subpayload_reqts) table; only one Video Data record per Sub Element.

No.	Validation Rules
1.	If Video Analog Downlink via ISS Video Baseband Signal Processor value is "Y", then Resolution, Frame Rate, Frame Rate Type, and Duration Analog Downlink cannot be NULL.
2.	If Video Digital Downlink via HDRL value is "Y", then Rate Digital Downlink and Duration Digital Downlink cannot be NULL.
3.	If Video Uplink value is "Y", then Rate Digital Downlink and Duration Digital Downlink cannot be NULL.

SCREEN A–39 COLUMN LEVEL VALIDATION RULES, TAB CONTACT INFO FROM THE FOLDER PL INFO (SHEET 1 OF 1)

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
First Name	PD.					N/A
Middle Initial	PD.					N/A
Last Name	PD.					N/A
Title	PD.					N/A
Organization	PD.					N/A
Street 1	PD.					N/A
Street 2	PD.					N/A
City	PD.					N/A
State/Province	PD.					N/A
Zip/Postal Code	PD.					N/A
Country	PD.					N/A
Phone Number	PD.					N/A
Internal Mail Code	PD.					N/A
Pager Number	PD.					N/A
Fax Number	PD.					N/A
Email Address	PD.					N/A
WWW Page Address	PD.					N/A
Other	PD.					N/A

TABLE LEVEL VALIDATION RULES FOR SCREEN A–39, TAB CONTACT INFO FROM THE FOLDER PL INFO

NOTE: Using PDL Table Customer list (customer_list).

No.	Validation Rules
1.	N/A

SCREEN A–40 COLUMN LEVEL VALIDATION RULES, TAB PL INFO FROM THE FOLDER PL INFO

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Payload Information	PD.				Not NULL. Must comply with DECIMAL AND HEXEDECIMAL VALUES FOR STANDARD ASCII CHARACTER SET TABLE.	N/A
Payload Description	PD				Not NULL. Must comply with DECIMAL AND HEXEDECIMAL VALUES FOR STANDARD ASCII CHARACTER SET TABLE.	N/A

TABLE LEVEL VALIDATION RULES FOR SCREEN A–40, TAB PL INFO FROM THE FOLDER PL INFO

NOTE: Using CDH Table Payload Information (cdh_payload_info).

No.	Validation Rules
1.	N/A

SCREEN A–41 COLUMN LEVEL VALIDATION RULES, TAB PROCESS FROM THE FOLDER PL INFO

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Lminus Stage	DSM				Not NULL, Must comply with Appendix DECIMAL AND HEXE-DECIMAL VALUES FOR STANDARD ASCII CHAR-ACTER SET TABLE.	N/A
Development Level	DSM				Not NULL, Must comply with Appendix DECIMAL AND HEXE-DECIMAL VALUES FOR STANDARD ASCII CHAR-ACTER SET TABLE.	N/A
Control Level	DSM				Not NULL, Must comply with DEC-IMAL AND HEXEDECI-MAL VALUES FOR STAN-DARD ASCII CHARACTER SET TABLE.	N/A

SCREEN A–41 COLUMN LEVEL VALIDATION RULES, TAB PROCESS FROM THE FOLDER PL INFO

Column Name	Type of User Responsible for Entering Data	Minimum Value	Maximum Value	Default Value	Valid Values	Valid values before promoting to Interim Level
Responsible User	DSM				Not NULL, Must comply with DECIMAL AND HEXEDECIMAL VALUES FOR STANDARD ASCII CHARACTER SET TABLE.	N/A
Promote To	DSM				Not NULL, Must comply with DECIMAL AND HEXEDECIMAL VALUES FOR STANDARD ASCII CHARACTER SET TABLE.	N/A
Description Of Process	DSM				Not NULL, Must comply with DECIMAL AND HEXEDECIMAL VALUES FOR STANDARD ASCII CHARACTER SET TABLE.	N/A

TABLE LEVEL VALIDATION RULES FOR SCREEN A–41, TAB L–MINUS FROM THE FOLDER PL INFO

No.	Validation Rules
1.	N/A